The Official Amstrad Magazine

August 1986 £1.00

AMSTRAD COMPUTER USER

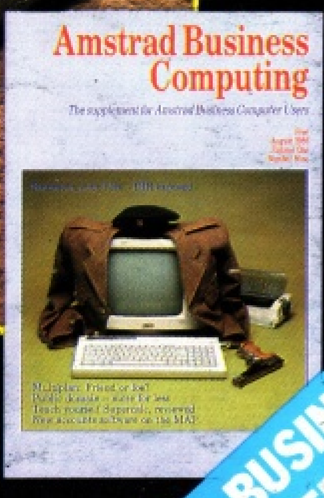


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AMSTRAD COMPUTER USER

The official magazine for users of Amstrad computers

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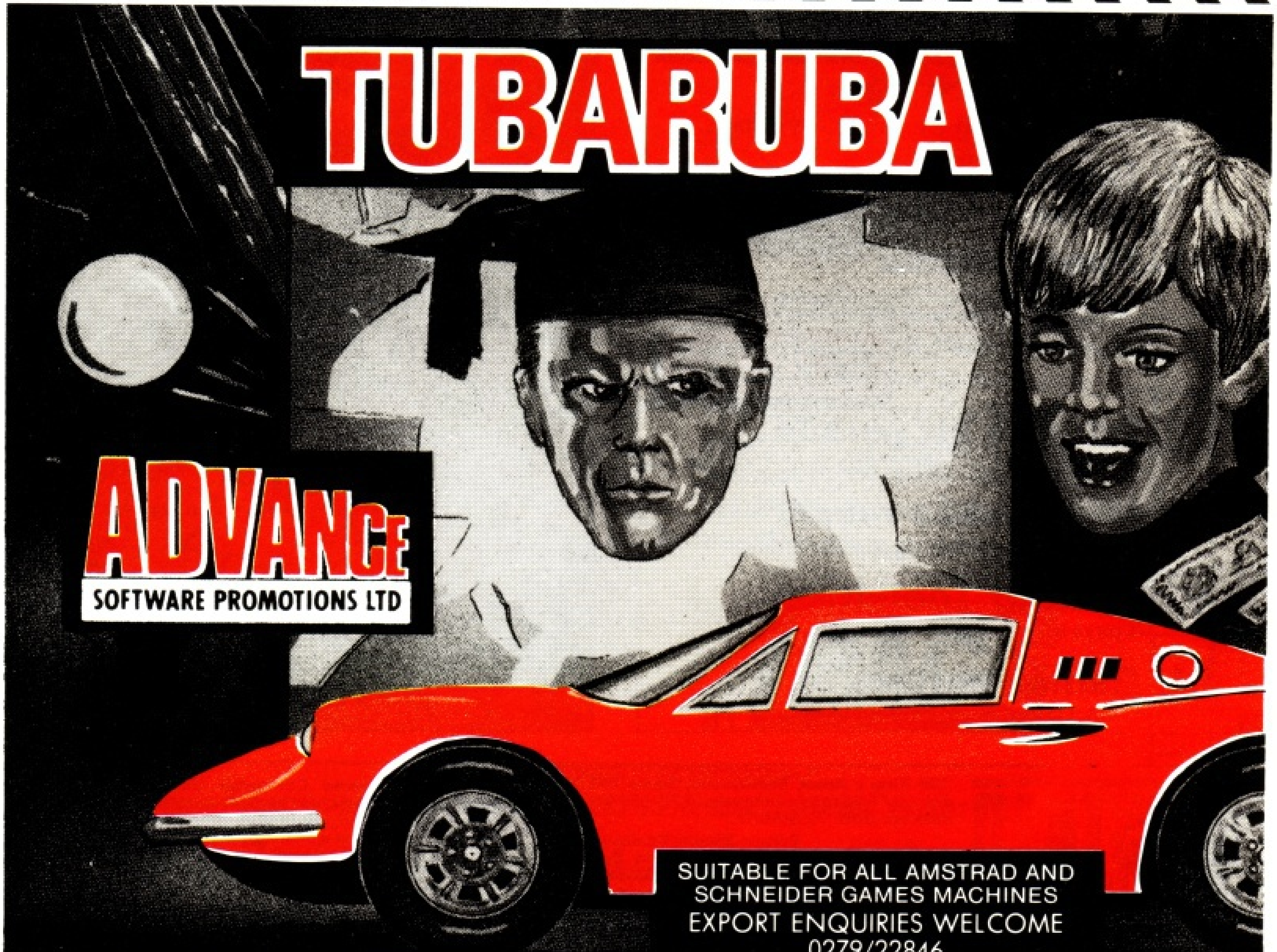
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Our show even beat the weather..

The fourth Amstrad Computer Show attracted more exhibitors and visitors than ever before. For the first time it took over an extra floor at the Novotel and despite the wonderful weather the show was very well attended.

The much rumoured Amstrad IBM lookalike was not launched, despite claims from the misinformed that it would be shown. Amstrad have a tight policy of not pre-announcing products and refuse to discuss any products they may be working on. They deny the existence of any new computer.

Amstrad did have one new product, the modem, a re-badged version of the Pace Nightingale. The Amstrad modem costs £99.95 and includes a free subscription to Micronet.

The noisiest stand award goes to Load & Run who had a special offer on the Electromusic Research Midi interface (reviewed this month). Mike Beecher from EMR gave a very impressive demonstration of using the Amstrad to control a variety of keyboards and drum machines.

Loadplan produced a classic game for the PCW – Space Invaders. Software houses have decided en mass to support the Joyce with games. Ocean are to convert Batman and The Edge will be releasing a Joyce version of Fairlight.

CRL already have some PCW games, Castle Blackstar and S.A.S. Raid, although none of these were seen at the show. Cascade used the Amstrad stand to demonstrate their new joystick interface on the PCW.

They hope to set a new standard for the machine and want any software house with games in the pipeline to contact them. The Cascade joystick interface for the PCW 8256/8512 is expected to cost around £20.

Pace had a new hardware add-on for the PCW, a serial and Centronics interface. This scores over the Amstrad version in that it is cheaper and easily available but does not conform to the full RS232 specification since it only outputs 5 volts when the spec requires 12 volts. Still, this will not matter for the vast majority of applications.

Both Quest and Caxton took large stands with which to be very Quest and Caxtonlike. Quest launched three new products including a solicitors' accounting package which rivals systems for many times the price.



Programs for the CPC

DK'Tronics ran a competition to give away a RAM pack. They were selling the software which lets a 6128 use the second bank of RAM as a silicon disc. In the near future – coming real soon now – DK will have a television tuner for the Amstrad colour monitor. This lets you use your computer as a telly.

Just think, you can now have all the arguments that having a dedicated monitor avoided. You can now watch Knight Rider instead of playing it. The unit sits under the monitor and will cost £59.95.

Gultronics proved that the DMP2000 is no longer a rare beast, by having a stand full of the things. AMS still hadn't finished Pagemaker (hurry up Jay and Gary, people are waiting) but at least they were taking orders. So that you can get pictures into Pagemaker, AMS are working on a digitising camera. They had some impressive hardware on the stand, including a Commodore Amiga and a Cannon bubblejet printer.

Grafsales were busy selling the ever popular Graphpad digitising tablet and showing a nearly completed version of the Joyce Graphpad.

Sunshine Books were selling a new book on the 8256, which was "going like hot . . . well pretty warm . . . cakes". Timatic is a name from the past. They have been involved in the Arnold project for a very long time. If you want to connect a funny disc (sic) drive to your computer then they are the people to do it. They produced the most expensive peripheral of the show a £5,000 plotter.

The largest stand was that of NewStar, who were selling lots of expensive CP/M stuff with HiSoft, MML Systems and Ambyte lending a hand.

Mikro-Gen were the only major games software house on the upper floor. They had Equinox on tape and disc, along with Battle of the Planets (a much underrated game) and the Wally progs. Their next release – Stainless Steel will be out in July.

Glentop Publishing produced a new range of books, one on the Joyce and an Advanced Programmers Guide which documents lots of things about the 464 which Amstrad would rather you didn't know.

Mirrorsoft were a major attraction, demonstrating an early version of Fleet Street Editor.

The highlight was a visit from Biggles himself, seen above reading about the Mirrorsoft game. He had just flown in, by helicopter, from Manchester where he had been appearing on the Saturday Picture Show.

The show may not have had very many surprises, but proved to be a worthwhile day out for any Amstrad owner.



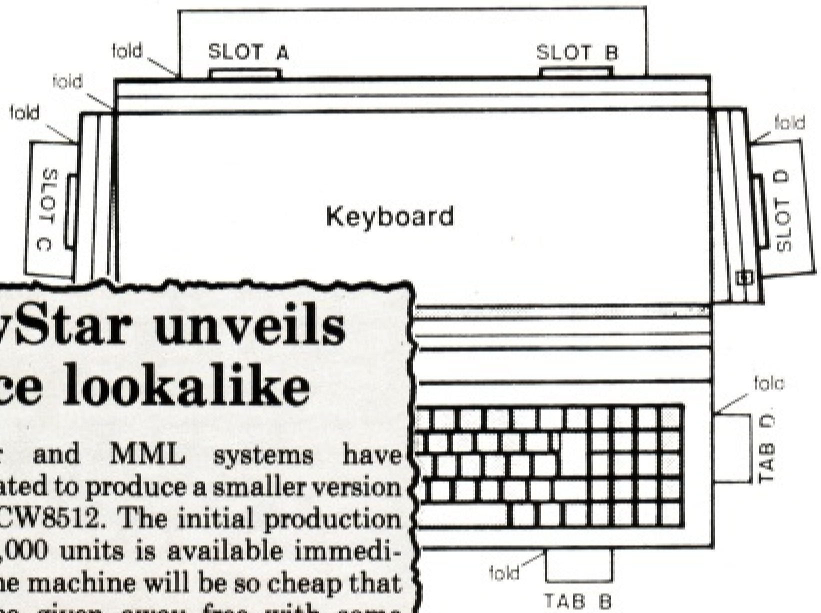
Return of Willy's authors

Software Projects, authors of Manic Miner and Jet Set Willy, have been very quiet in recent times. Now they have burst back into the limelight by announcing a new product, Dragon's Lair.

This was originally a laser disc arcade game with cartoons by Walt Disney illustrator Don Bluth. Several people have threatened to produce a home version but now it looks as though it is actually happening.

The game follows a dungeon adventure theme where, according to the direction in which you move the joystick, different sections of animation are displayed.

In the arcades Dragon's Lair was so popular that players queued into the streets. We don't know how Software Projects intend to produce the same effect without a laser disc, but we are quite sure they will do justice to Dirk the Daring as he battles to save the princess.



NewStar unveils Joyce lookalike

NewStar and MML systems have collaborated to produce a smaller version of the PCW8512. The initial production run of 5,000 units is available immediately. The machine will be so cheap that it will be given away free with some software.

Called "This is not the PCW8512" the machine comes with two discs and a sheet of paper. More precisely the machine IS a piece of paper – a cardboard cut-out. By cutting along the lines, glueing and folding in best cereal packet style you can build a model Joyce.

William Poel of NewStar sent out press releases to lots of the big computer magazines and the national newspapers telling them of a major new computer launch at the Amstrad show. Next month we will offer a cardboard cut-out of an angry mob! Amstrad customer services have already designed the cut-out CPS8256.

Micronet discovers the Amstrad

It took Amstrad users a surprisingly long time to discover Micronet, but now thanks to the likes of Amstrad, Pace, Cirkit, Honeysoft and others there are lots of eager Amstrad computer users on-line.

Now that they have discovered Micronet, Micronet has discovered Amstrad users and is providing a database for them, to rival the increasingly popular Amsnet run by Viewfax, another Prestel information provider.

The Amstrad Microbase will have news, a technical hotline and some free telesoftware.



Boxing clever

The world has been waiting for a box to take 3in discs. 5¼in discs fit neatly into a shoebox and there are loads of different types of boxes for 3½in discs but only now is there a box for the industry standard 3in disc.

Made by Protomec of Spain it has a clever little lever which makes it easy to get the discs out.

The box costs £6.95 and holds 10 discs. You can get them from SBS data services of Brighton (0273) 726331.


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Maintenance contract for 8256	£41.40
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(also available on ROM & Cartridge)		
Beebug Soft Rembrant	£13.95	£16.95
Mini Office II	£14.95	£19.95
Laserbasic	£14.95	£19.95
'C' language	£34.95	£39.95
Supercalc II	—	£49.95
Sage Accounts	—	£99.95
Sage Payroll	—	£69.95
Mastercalc	£24.95	£29.95
EasiAMScalc	£19.95	—
Masterfile	£24.95	£29.95
Gemini Office Master	—	£24.95
Gemini Office Mate	£15.00	£17.50
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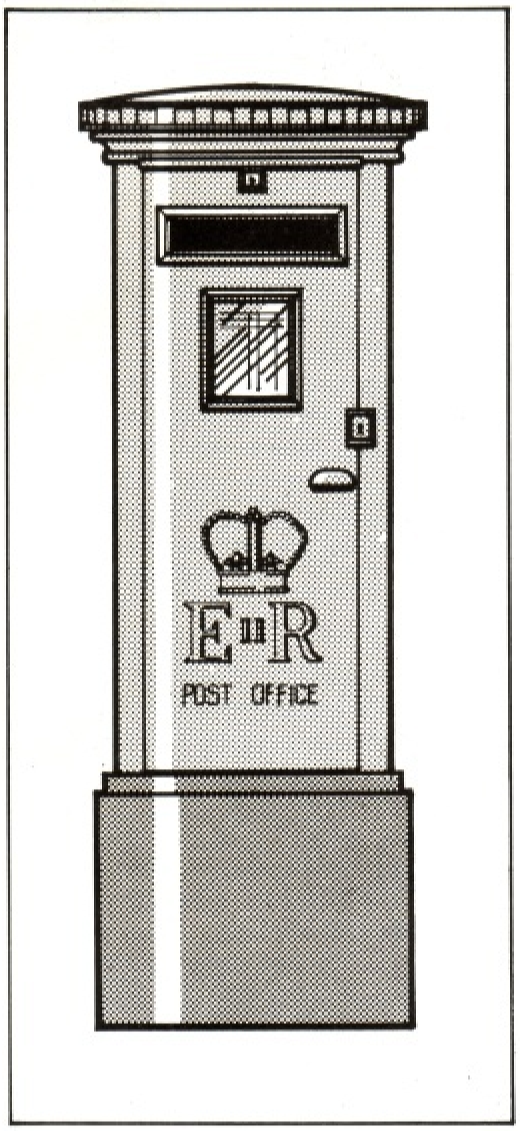
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Write to reply



Screen stealing

I have read *ACU* since its introduction and have found much interest in the articles and listings, many of which I have typed and run successfully.

As I don't own a printer could you please tell me if I can use the events and screen dumps program in the March 1985 issue to save a picture to cassette? I would be very grateful for your help.

David Dukes,
Newcastle,
Staffs.

ACU: *Yes, you can adapt the events part of the program to save a screen but the registers which control the colours are write-only so you will not be able to save those.*

Cut off Quickshot

In the May issue of *ACU* there was a review on joysticks. One of those mentioned was the Quickshot II which you said had problems with the autofire.

I bought a Quickshot II about a year ago and found the same problem but now I have a simple solution. All you have to do is remove the bottom of your Quickshot and remove the red wire from the side of the circuit board, then tape over or cut off the end of the wire.

Crawford Alves,
Bearsden,
Glasgow.

ACU: *Thanks for the tip. What you didn't say was that this modification only stops the auto-fire from crashing the computer – it doesn't get the auto-fire to work.*

A different sort of character

In the June issue of *ACU* I found a letter from a nice Amstrad-enthusiastic teacher.

She had a problem which was that the foreign characters of French, Spanish, and German wouldn't come out on her DMP1 printer, only on the screen.

But your help to the teacher was not very nice – you recommended her to buy a Joyce, and that was not a very friendly move. There is a solution – the program Tasprint from Tasman Software is a very impressive program for the Amstrad. It is 100 per cent compatible with Tasword/Amsword and some Basic programs. It can make a lot of foreign characters in five very handsome styles, on a lot of printers, including the DMP1.

Those were the bad things . . . and now the good ones. *ACU* is the best computer magazine I have ever seen, keep it going like that, and I will read it to my dying day. It is professional, funny and very interesting.

Rene Hjorth,
Helsinge,
Denmark.

ACU: *We didn't know that the editor had any relative in Denmark. Thanks for writing.*

Questions, questions, questions

First things first – could you tell me if there is any book on the market which deals entirely with music on the Amstrad? And also what is the best listings book? *(Try Music & Sound on your Amstrad from Melbourne House – we can't recommend a general listings book.)*

Now here's a few hints for your magazine, excellent though it is. *(Creep).* 1. Less of ABC *(That's not what the Joyce owners say.)* 2. Keep up the Hairy Hacker's Haunt, as it's very good. *(Blush, blush – compliments passed on to Vax & co.)* 3. Fewer adverts, there are too many. *(In the main it is the adverts which pay for the magazine, the more ads the more pages overall.)* 4. How about a software company top 20 chart? *(If there is the demand we will try.)* 5. Your software reviews are excellent, keep them up, especially your colour screen shots. *(Thanks.)* 6. How about doing a software mailing system, where we can buy any game reviewed in all your issues? *(The administration for this would be very difficult – besides it looks a little fishy if we review things and then try to sell them to you.)* 7. Keep printing listings with screen shots if possible. *(Point taken.)* 8. Could you maybe lower the price of your listings tape? *(With the small production runs we have on the tape and the administration and postage costs involved, it really is as cheap as is practical.)*

Andrew Duff,
Ross-shire,
Scotland.

Welsh accent

Following on from Susanne Lees' letter – and your reply – why won't my PCW8256 Locoscript permit me to produce grammatical Welsh? With the current emphasis here on bilingualism (my driving licence and all official forms are supplied in both English and Welsh – if they aren't, they go on the fire) can't the half-million of us who understand the language find a way around this problem?

It is crucial to be able to produce the letter w and y with a circumflex, or a "to bach". For example, I can type the name of the town Cwmbrân correctly, but when I try it with my own address it comes out as Tŷy Clwyta Cottages – not good enough!

At least the PCW8256 doesn't insult us

as much as the newspaper computers in use down here, which all seem to delight in splitting and hyphenating the dd, ff and ll – which, of course, are single letters in the Welsh alphabet.

It may not seem important to you, but it does to us – the word for a choir is côr, but if you leave off the circumflex it translates as dwarf. And if you're writing to the Welsh Water Authority, the word for water is Dŵr – without the circumflex, it can translate as a heap of manure. Pob hwyl.

Mick Tems,
Mid Glamorgan,
Wales.

ACU: I hope we got all the accents and things right printing your letter. The number of Welsh users does not justify the cost of producing a special manual and software.

Novel use for 464

The Rev. Allan Webster's one line word processor reminds me of a similar program I wrote two years ago. I used it on my 464 – one of the very first batch – while I waited for the Amsword word processor to appear.

I used it to write a fantasy novel, Finnglas and the stones of choosing (Lion Publishing, £1.50).

Fay Sampson,
Exeter.

ACU: It is normal for us to charge for advertisements – still we'll let you get away with this plug.

High speed discs

Ten days ago I purchased a PCW8256. Since then I have tried in vain to obtain spare CF2 discs locally. Yesterday lunchtime I picked up the phone and called Squirrel's Byte Leicester, and the discs arrived this morning 9am. Thank you Squirrel's Byte and the Post Office.

J.M. Ambler,
Seamer,
Scarborough.

Master of the sprites

I am fairly new to computing and I was wondering if there is any way to get multicoloured sprites using the SYMBOL command.

Richard Devlin,
Derry,
N. Ireland.

ACU: We had a great article on multicoloured characters in the December issue, but it is a shade (ouch!) more complicated than just using the SYMBOL command. See the back issues coupon on Page 85.

Software con

Referring to my letter published in April's edition of *ACU* I cannot accept or understand your remarks that software is expensive to produce, unless there is a figure relative to the risk. Writing this letter is an expensive exercise. The statement is meaningless unless relative values against financial risks are considered.

Expecting a customer like me to pay £300 for a common everyday program like Wordstar, without the feeling that I've fallen for the three card trick, has got to be a joke. Because if companies like Dixons can give it away free, then it is because the suckers – of which I will not be one – are subsidising the promotion of a computer which they do not support without realising it. These are the real pirates in the computer world, not me.

All I want to do is pay a fair price and not feel a ripe plum ready for the taking.

Walter Parsons,
Royston,
Herts.

ACU: We concede that £300 for Wordstar and similar programs is too much, but you have to look at the history of the products. When a CP/M system cost £5,000 there were not nearly as many customers as there are now that a similar system costs £500. A game takes between three months and two years to write, and will sell in the thousands. Writing a program like Wordstar is a risk – you have to guess how many copies you are likely to sell and average the cost of development out over the sales.

With Wordstar MicroPro guessed wrongly and overpriced it – although at the time the competition also sold at similar high prices. Similar arguments could be put forward on the games scene – sometimes volume will more than compensate for low margins. If there is the demand then the product should be cheap, if not you will have to pay more. Remember you can't expect the same amount of support with a £30 program as you get with a £150 program.

Disc dearth

Why do most software companies treat CPC6128 and 664 owners like they have the plague? What I mean is because I have a disc drive I feel like an outcast. Let me give you a example.

I purchased both a copy of Arnhem and Desert Rats from CCS on tape as this is the only format available. Being a basic machine code programmer I worked out that both programs can be converted to disc properly if the AMSDOS workspace is moved.

Now this is beyond me so I wrote to CCS requesting if they could transfer both programs – for a fee – or provide technical information. They told me that Desert Rats was released before the disc drive CPCs – which is not true – and that they had finished with Desert Rats and were moving on to other programs.

This is the standard reply I seem to receive from software houses on this matter. This type of treatment of users should be stopped and maybe your magazine could lead the way towards this.

The standard reason for not providing certain software on disc is the lack of supply of this format, which is a lot of rubbish because they can provide a version on the tape which can be transferred to disc. The software house's reply would be that it makes it easy to copy its programs. The fact of the matter is that I have yet to come across a program that I cannot backup on to the same format – tape or disc. For example, Strike Force Harrier and The Music System which have been designed so that they cannot be copied are dead easy.

Mr H.P. Boyle,
Uxbridge,
Middlesex.

ACU: Just because you are clever enough to copy most of the discs around is no reason for software houses to give everyone a leg-up in pirating their products. I doubt that you can copy all the discs about – have you tried Tomahawk or Working Backwards?

Most new titles are available on disc either direct or through the Ambyte scheme. The Mirage Imager will transfer most things from tape to disc if you really want a particular program which is only available on tape. A program which backs itself up on to disc is a licence to print money – playground piracy is a huge problem and everything that software houses can do to eliminate it should be applauded.

Rabbit, rabbit

I have spent many busy hours typing Splatch in from your November and December issues and although I am a professional programmer I am not very good at playing computer games.

I find Splatch quite addictive although I have only recently reached screen E. I cannot get past this because on my version there are only 15 carrots on the screen whereas the total given on the top right is 16. When I have eaten all the carrots the program is still expecting me to find one more.

Linda Johnson,
Lanark.

ACU: You need to drop an acorn on to a squirrel – this will turn into nine more carrots.

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PROTEXT FEATURE SUMMARY

File commands — Super fast Load, Merge and Save, Cat, Print (to printer/screen/file)
Cursor Movement — By character/word/line/paragraph/screen, to start or end of line, to start or end of text, to line number, to place marker, to margin.
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Built in character sets — Danish/French/German/Italian/Spanish/Swedish.
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BENCHTESTS

A standard file of 775 words (4,785 characters) was used to carry out the following benchtests (all timings are in seconds):

	PROTEXT	TASWORD/AMSWORD
1 LOAD text file	4.7	10.2
2 SAVE text file	4.9	18.9
3 Re-FORMAT paragraph (85 words)	0.4	15.3
4 Re-FORMAT entire text	2.5	Not Possible
5 Move directly to start of text	under 0.1	2.2
6 Move directly to end of text	0.2	2.2
7 REPLACE 'the' with 'THE' (45 occurances)	1.7	34.1
8 SCAN entire text	2.2	7.2
9 MERGE file to centre of text	4.0	Not Possible
10 MERGE file to end of text	3.8	12.4
11 MOVE 85-word paragraph	under 0.1	6.8
12 PROGRAM LOAD TIME		
DISC	12.9	14.6
ROM	Instant	Not Available

PROMERGE/PROMERGE PLUS

This major addition to the PROTEXT word processor combines a fully flexible mail merge program allowing PROTEXT to produce individualised documents in one single print run.

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Print file direct from disc or memory.
Auto configuration – you can set up a disc to configure PROTEXT to your preferred options with a single keystroke.
Typewriter mode – for envelopes etc.

PROMERGE PLUS —
PROTEXT ENHANCEMENTS (ROM version only)
All the features of PROMERGE together with –
Background printing – edit one file while you print another.
Two file editing – switch between two files in memory.
Cut and paste – any block of text can be moved to any position – allows multiple column layout.
Tasword users – automatically converts your old text files.
Calculator – a simple on screen calculator for those invoice totals etc.
6128 OWNERS
PROMERGE PLUS MAKES full and sensible use of your extra 64K memory but also functions with smaller files on the 464 and 644 machines.
Also uses D K Tronics 64K RAM expansions.

PRICES

	DISC	ROM
PROTEXT	26.95	39.95
PROMERGE	24.95	—
PROMERGE PLUS	—	34.95
PROSPELL	24.95	34.95

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PROSPELL

★ Checks your spelling ★ Proof reads your documents ★
★ Solves your word puzzles ★

— How to use PROSPELL —

The spelling checker can be called directly from within PROTEXT to check the current file in memory or any file on disc. Alternatively, PROSPELL will check any ASCII file produced by other Amstrad word processors, including Wordstar type files.

— Features available —

Add words to the dictionary/Correct word/ignore word/Look up correct spelling/View word in context/Delete words/List words/Initialise new dictionary....PLUS....

— Word Puzzle Features —

The 30,000 word Dictionary can be used in a number of useful ways.

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ANAGRAMS — PROSPELL will even list all anagrams of any word pattern you type in.

Together these features will prove invaluable to crossword solvers and compilers.

— THE POWER OF PROSPELL —

Some spelling checkers work as slowly as 150 words per minute.
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SEEK AND YE SHALL FIND...

Into adventures with Bill Brock

Long ago – well last year anyway – Level Nine produced a program which added the use of spells to the usual adventuring requirements, Red Moon was an outstanding success. Later in 1985 the same group gave us The Worm in Paradise, a science fiction adventure that had a quite remarkable vocabulary of more than a thousand words and which recognised input commands such as Up, Examine all but the helmet and go East.

Their latest marvel, The Price of Magik, is set in the same magical world as Red Moon and has the extended operating system of The Worm. All three additionally feature multitasking which allows you to type in commands while the pictures are being drawn. This may not sound very important but if you are repeating a series of moves it saves time and helps maintain a feeling of continuity.

Each Amstrad cassette has three versions of the game – text and graphics, extended text and graphics or extended text but no graphics. Only the first and last of these options are available to machines with 64k of memory. CPC6128s and 464s with additional memory may choose any version.

All have the same number of locations and the same puzzles but machines with larger memories have two additional commands at their disposal – RAM SAVE and OOPS. RAM SAVE enables the player to rapidly save and subsequently restore the game position to or from a section of the computer's memory. This is a particularly useful feature as its regular use can ensure a known base to return to if you get lost or meet something you would rather not.

Although RAM SAVE – or QUICKSAVE – has appeared in some other game, OOPS would seem to be a Level Nine first. *(Infocom has a different type of OOPS – Ed).* It simply undoes your last command and returns you to your last location – very useful if you are attacked by a werewolf or punctured by an exploding chest! Regular 64k Amstrad owners will have to use the tape save and restore commands as usual.

This is the first adventure game to be protected against piracy by using the Lenslok system. A plastic prismatic lens is supplied with each game that converts a load of rubbish on the screen into a readable two letter code. The code is entered, and if correct, the program continues. If not then you have to try again until you get it right.

The characters seem to be fairly easy to identify but look after that plastic lens – it will cost quite a bit to replace it. Just take care, read the instructions, get the lens the right way up and all should be well.

Enough of the mechanics, let's look at the game itself. The action takes place in and around The House of the Red Moon, with the object of the game being to find and defeat the sorcerer Myglar. For years he has been the guardian of the source of magical power – the red moon crystal of Baskalos.

As time passed he has become more aware of his own mortality and has perverted the crystal's power to his own ends. If he continues, there will be no magic left in the world. You must stop him.

There are plenty of places to explore and interesting things to find and use. None of these are treasures in the normal sense but they will help you learn how to use the 18 spells necessary to reach and destroy Myglar.

Learning to use each spell requires knowledge of both the name of the spell – BOM, FLY, ZAP and so on, and an object that will enable you to focus your power on



The Price of Magik: Level Nine's best yet

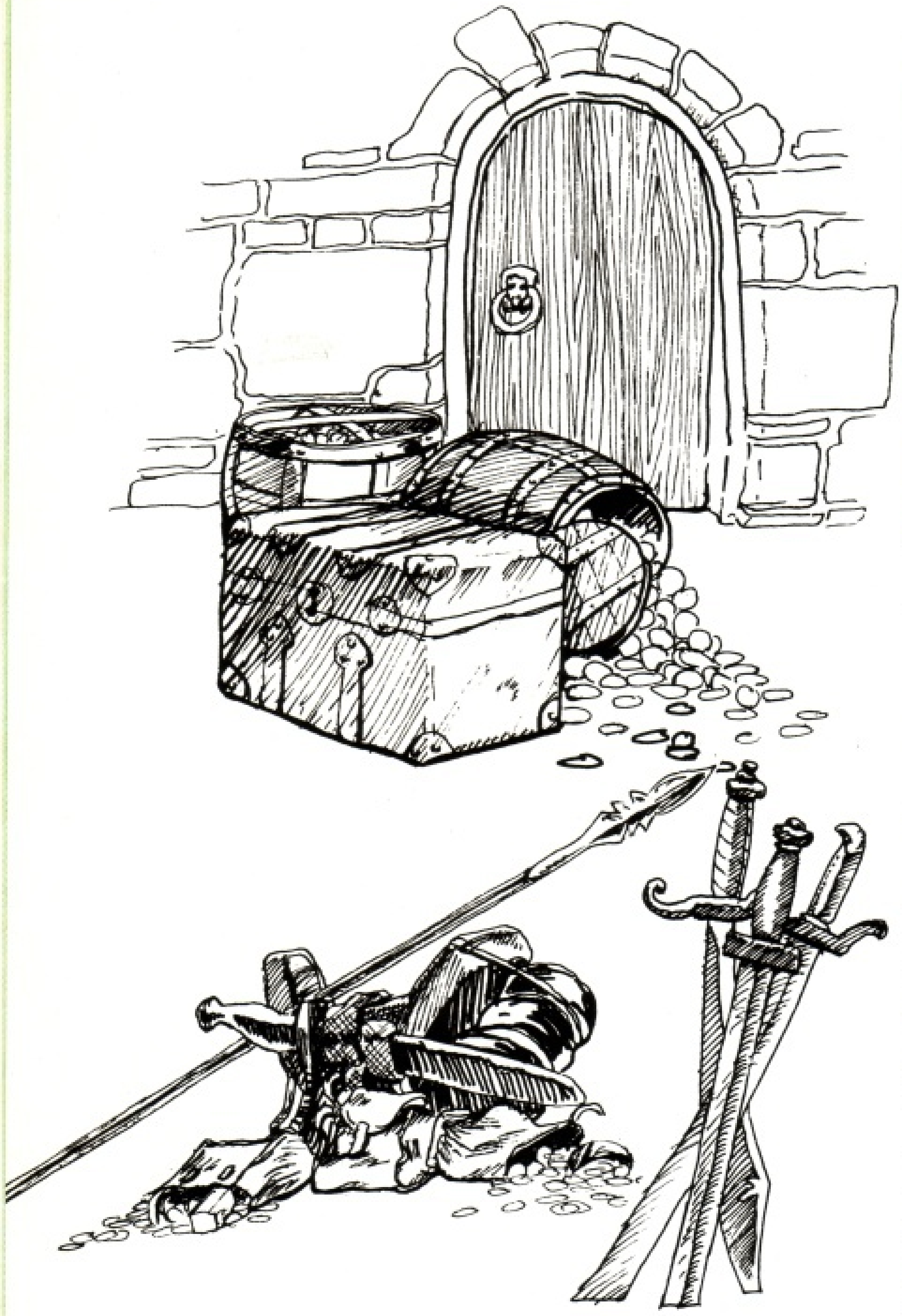
performing that particular magic. Clues found along the way will supply the names and CAST XXX will tell you if it has worked, or if not, what else is needed.

No score is given, but type in SCORE and you will get a report on your present sanity and apparent age. Get too old and you are done for! Your stamina is also important, as there are several unpleasant creatures you may meet who will not let you past without a fight.

A weapon and some form of armour are useful finds before you get too involved. Death in this place, so full of the powers of magic, will release an avenging ghost, so it is wise not to be too bloodthirsty unless absolutely necessary. It is also possible to control some of these creatures, but that spell may not be so easy to find.

This adventure is surely Level Nine's best yet. Graphics are drawn quickly and the text is up to the usual high standard. Finding spells and making them work is a clever variation on treasure seeking and the usual game puzzles. There are plenty of clues – if you know where to look – and Level Nine's own brand of humour is never far away.

If you have any problems, remember that the group



provides those marvellours clue sheets on receipt of a stamped addressed envelope and the hint request that comes with every game.

A highly recommended game for expert or beginner – colourful, inventive and full of interest. One can only hope that Level Nine can sustain such quality in the future.

No high flyer

Melbourne House has quite a reputation for adventures, starting with The Hobbit which broke so much new ground that the adventure game field has never been quite the same since. Its latest release is Redhawk, a graphical adventure with a difference. The graphics are in the form of a comic strip, which is quite relevant as the game is all about a comic type superhero – Redhawk.

Text entry directs Kevin Oliver – Redhawk's alter ego – out from the hospital, where he finds himself at the start of the game. Around the town he searches for a job as a crime photographer and then on into whatever adventures you like to give him.

He has lost his memory and you have the choice of making him act as either a superhero or supervillain. Redhawk's popularity rating is shown graphically, giving you something to aim for. This rating also affects how other characters will interact. To solve the strange goings on it seems best to aim for the hero rather the villain.



Redhawk: Disappointing comic strip adventure

Type in SAY – or SHOUT – "KWAH", not forgetting the quotes, and Kevin will change into the formidable Redhawk, able to fly and generally do most things superheros are claimed to do in their sleep with one hand tied behind their back. The only snag is that in Redhawk's form, his energy output is high and his reservoirs of power fairly low. So a return to being plain Kevin is very necessary after a short interval.

The location descriptions are almost non-existent as they are all included in the comic strip shown at the top of the screen. This consists of three panels or frames that scroll across the screen from right to left as each command is actioned. You would think that this would show the present and two previous scenes but this is not the case.

Each command entered, if understood, is repeated by the Kevin in the strip and only then is that command actioned – two frames for one command. This would not be so bad if the frames were drawn quickly but they are not. It is quite painful if all you want to do is go from location A to location B but it is even worse to have to wait for the frame to be drawn to be told that Kevin looks for a way north but can't find one.

The game is played in real time and there is a digital clock ticking away the seconds as you wonder what to do next. Quite rightly the clock is stopped if Kevin does not understand what you are trying to get him to do. Unfortunatley this seems to happen all too often – his understanding of normal adventure talk is sadly lacking.

His inability to understand the command "Open door" brought up the response that "open" confuses Kevin. Another departure from normal practice is the use of the word Examine. Here it literally means a body search – it is not surprising that a young lady, met early on in the game, objected quite strongly when I told Kevin to examine her!

Fairly complex sentences are understood and the game also has STORE, a version of rapid saving of the

game position to the computer's memory. Normal tape save or load to cassette is used for a more permanent record.

A disappointing game and boringly slow when you consider that you are waiting for minimal text and very mediocre graphics. The game puzzles are not bad but the lack of any real atmosphere destroys what could have been a really innovative production.

Lost . . . frustrated?

I have had quite a few letters from readers with something in common . . . help. Now we all have problems solving adventure games and the pleasure obtained in playing them would soon be lost if they were all easy to solve. This present spate of "help me" letters comes, not from regular adventurers who know the ropes, accept all the challenges inherent in starting a new game and who are stuck for a vital clue, but from beginners to the field altogether.

Often they are new to the Amstrad itself and several say they have become so frustrated that the computer has been returned to its box and put away in a drawer. *(A big drawer if they are packing the monitor away – Ed).* Local help lines have been tried and local computer clubs contacted, even the software houses themselves have not been able to materially assist these poor souls.

The questions vary of course from game to game but two things seem to be common. First is the operating system – not the game's but the player's! Second, the question of which games I would recommend for the beginner.

Those of us who have had some success in solving adventure games tend to forget what it was like the first time we were lost in a strange land with nothing but our wits to help us get out. Although we covered this subject only a few months ago, perhaps a brief recap will help those who are planning to write.

1. Draw maps of where you go. Most games have their locations laid out on a grid pattern. A series of boxes drawn on a sheet of paper with a very brief description of the location and what you find there will serve. A series of lines joining the boxes will indicate which location is to the North, East, West, South West and so on of each location.
2. Keep a separate note of all objects you find scattered around. Most games are logical, even if that logic seems strange at times. A list of objects may help you spot a link between one of them and a puzzle you are trying to solve.
3. Examine everything you can see – many useful objects will most likely be hidden in or behind something else. On the same lines, try moving statues, logs and the like.
4. save your game position fairly often. There is nothing more frustrating than having to repeat lots of moves because your character got killed by doing the wrong thing.
5. If you find yourself in a maze of locations all with the same description – stop and load your last saved position. Then enter the maze carrying all the objects you can. Drop something at each new location so that you can identify where you are when you return to that same place. Map mazes carefully on a separate sheet of paper.
6. Now you have an operating system for yourself, learn to understand the game. If you come across: "You are to the West of a hut in the forest", do you get inside by typing In, Enter hut, Open door, Go hut or just East? Each game has its own idiosyncrasies – learn what they are and use them to your advantage.

This brings us to the second point – which adventures give the novice the best possible start? Ideally you do not want to spend too much time trying to make the computer understand what you want to do. So look for a game that has a good vocabulary and that will accept commands in much the way you would speak them.

Some games have a clearly defined plot that means you have to solve one part before you can tackle the next. Mindshadow from Activision is such a game. It is not that easy, but everything you find has a purpose and the uses of most of the items found are reasonably logical. Mindshadow also has a training program that will help explain the general rules of adventure games.

Other very good starters would be the latest Level Nine games, Red Moon and The Price of Magik. These adventures are fun and have a good dose of humour, but they can be quite devious. They are good for beginners on several counts, the most significant being the excellent hint sheets available for the cost of a single stamped addressed envelope.

These sheets contain many hundreds of numbered clues, some of which are total red-herrings! They are split up into objects, places and answers. Look up an object and you will be directed to at least two further numbered answers. These are written in no special order, so it is not difficult to only read what you want to know and not something that will spoil any future game play.

Having these hints to fall back on serves two purposes. You do not become totally frustrated by being unable to solve a puzzle and more importantly, you learn how adventure game puzzles are built up. Next time you may not need a crib sheet.

Offers of help

If you have solved any adventures and are willing and able to tell others how to get past the tricky bits, please let me know. We can either publish your name address and telephone number, together with the games you have solved, or pass them on to those in desperate need.

One such offer has come from Pat Winstanley, who has completed Red Moon, Worm in Paradise, Snowball, Subsink, Gremlins, The Hobbit, all Nemesis and all Interceptor (except Warlord).

Pat's address is 18 Hollington Way, Wigan WN3 6LS. If you write for help, please send a stamped addressed envelope. She is also interested in writing adventure games using GAC and would be very interested in others doing the same – why don't you send one for me to review?

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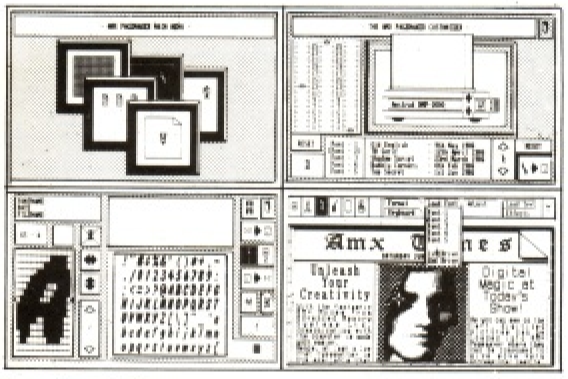
The object of their enthusiasm is AMX Pagemaker – a revolutionary software program that will produce newspapers, posters, leaflets, notices and hand-outs – in fact anything where text and graphics are required, to an extraordinary professional standard.

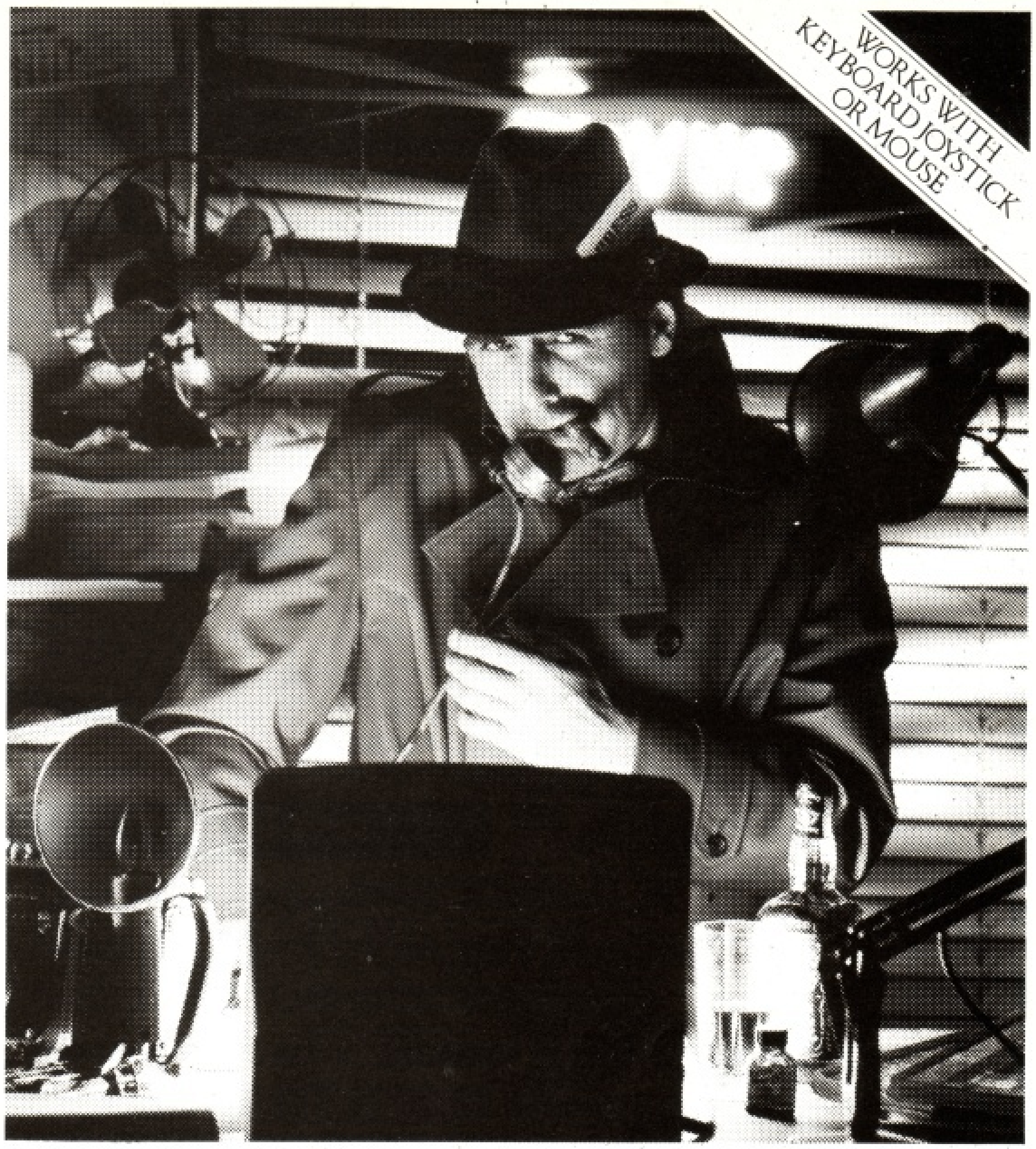
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*'Educational Computing', January 1986.

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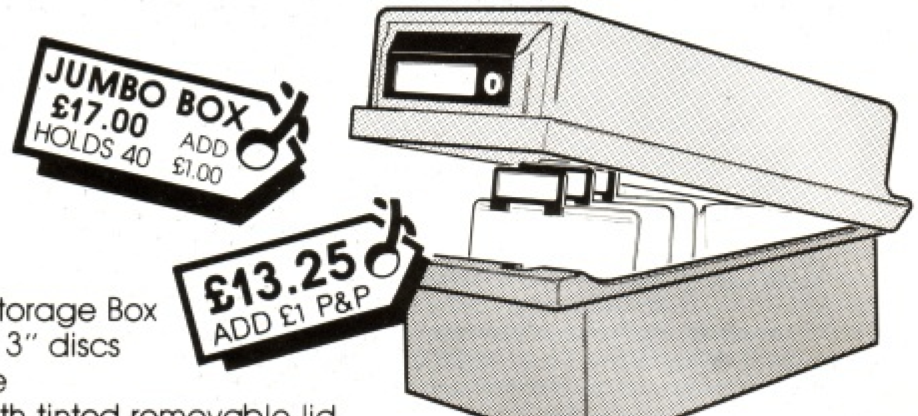
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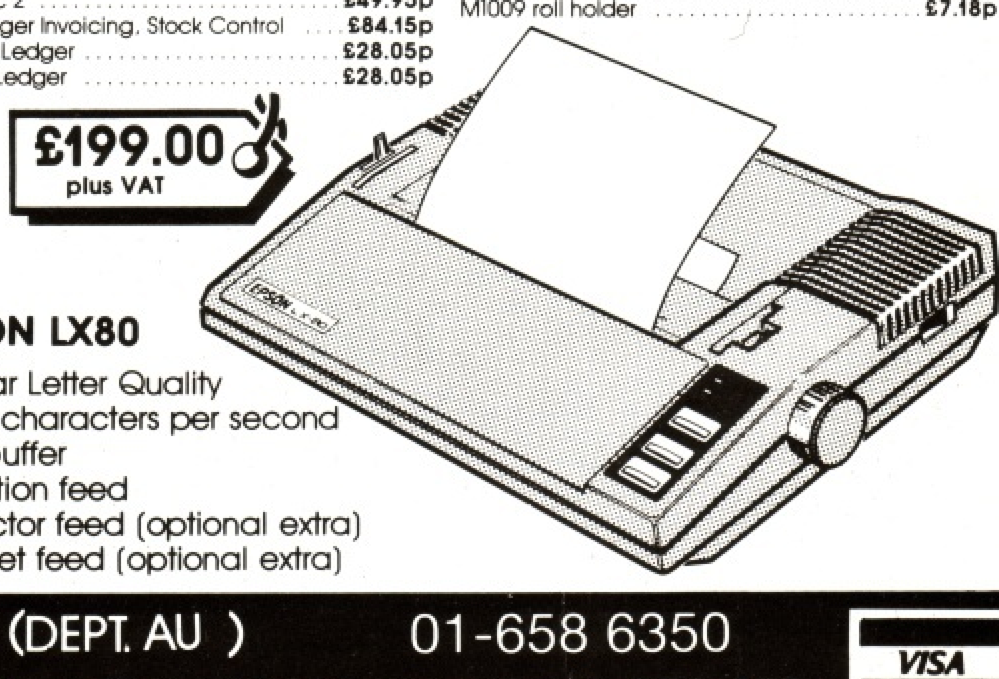
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Controversy behind, Domark settle for battle



The combat game market is hotting up. The latest pugilist to enter the arena is Gladiator from Domark. Simon Rockman looks at the company and the program.

Domark has had more ups and downs thanthe Otis *(A make of lift – Ed)* which takes you to the *Amstrad User* office. It has always had a high profile – the image of good marketing helping mediocre software.

Its first program was Eureka, an adventure written by Andromeda software which took the player through a myriad of different times but this was never converted for the Amstrad. It came out just after the Arnold, offering a huge cash prize to the first player to finish. If no one managed this the £25,000 would be split among everyone who bought a copy. This was an excellent deterrent to piracy and an incentive to play the game – "I can't have my tea now Mum – I want to win £25,000".

Just as the deadline was looming a schoolboy told Domark that he had finished the game and left last year's PCW show with a cheque and a large grin. Even for the people who didn't win, Eureka was good value for money.

Double Oh Seven

The first Domark program to appear on the Amstrad was View To A Kill based on the James Bond film. While the music by Duran Duran was doing very well in the singles chart the game did less spectacularly in the software stakes. View To A Kill was rushed and it showed. This was not helped by lots of magazines being offered an exclusive.

Domark has never worried about what prudes might think. Friday 13th was a very successful horror film. It was certainly scary, I trembled through part two, walked out of part one, and avoided part three – in that order – but then I'm just a coward. Still a lot of people like being scared silly and were very popular.

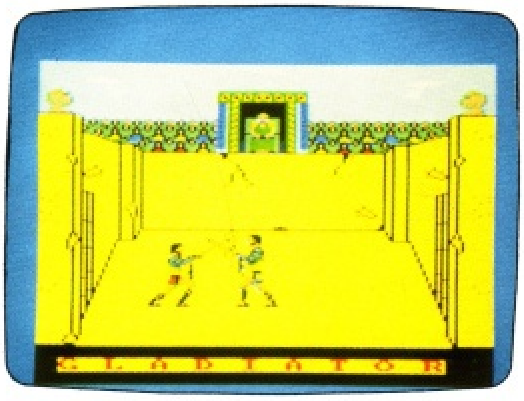
The game of the same name caused the kind of trouble on which Domark seems to thrive. There were calls for it to be withdrawn, the advertisment had to be changed and Domark claimed that it was all in the best possible taste. Unfortunately the game was not as scary as watching an undead attack two teenagers in a VW Beetle. It was too easy by far. All you had to do was grab the spear and throw it enough times.

Domark seems to look for controversy. One of its newest releases, Splitting Image, has annoyed the people at Central Television so much that the name has had to be changed to Split Personalities, but fortunately the game – a block puzzle program – is good enough to weather the storm.

Gladiator, their newest release, has none of the usual Domark traits. No big name tie-ups, no rumours or scandal, it is just a good down-to-earth combat game. The Amstrad conversion has been written by Mike Moscoff who was part of the original Spectrum programming team.

Mike is a programmer working on big IBM mainframes but was attracted to the micro world by the graphics. He complains that the mainframe world is all accounting and no fun but that games programming is much much more time consuming. The conversion from Spectrum to Amstrad had taken over three months.

It was originally intended to be a Mode 1 game but the lure of extra colours and the quest for speed led to a switch to Mode 0 one month into the project. This meant that the all-important sprite routines had to be re-written.



This shows the gladiator graphics. A score will be added.

When I saw Gladiator the code was nearly finished but the graphics were still being finished by an artist the other side of London. The smoothness of the graphics is partly due to the use of a buffer to the screen which allows the whole area where the fighting takes place to be updated in one fell swoop.

The key combinations got very complicated with the Spectrum and Spectrum 128 versions so Mike has simplified the options for the Arnold. You still have just as many weapons to choose from and can still throw your sword or dagger but the key combinations have been made easier.

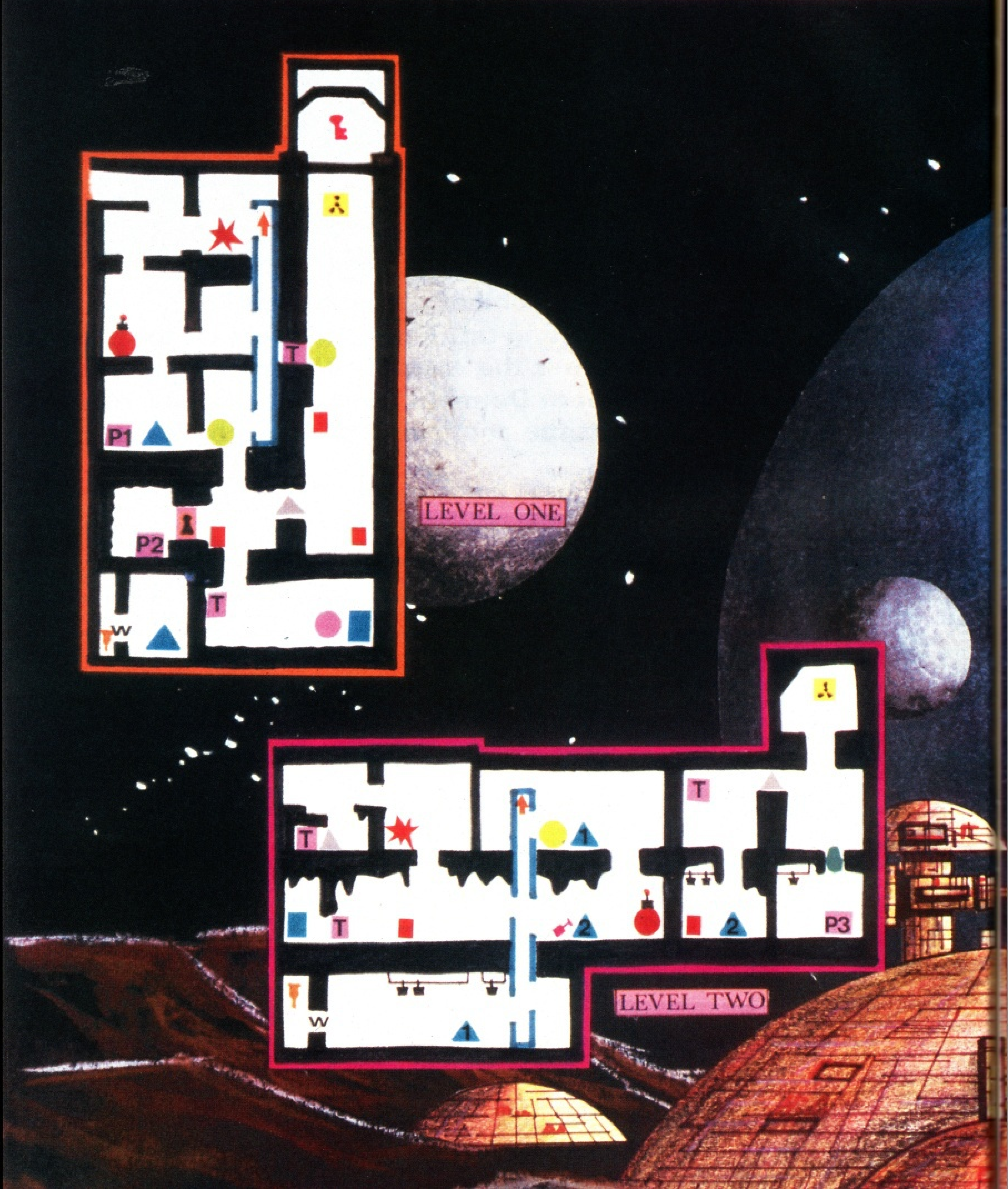
A useful hint for players is that the trident is the most powerful weapon (Mr Reagan believes that too). You can use two tridents despite the software recommending that you select a shield. There are many types of weapon including a ruler, which Mike says is there because of the ruler fights he used to have at school. You could arrange a fight to the death with rulers.

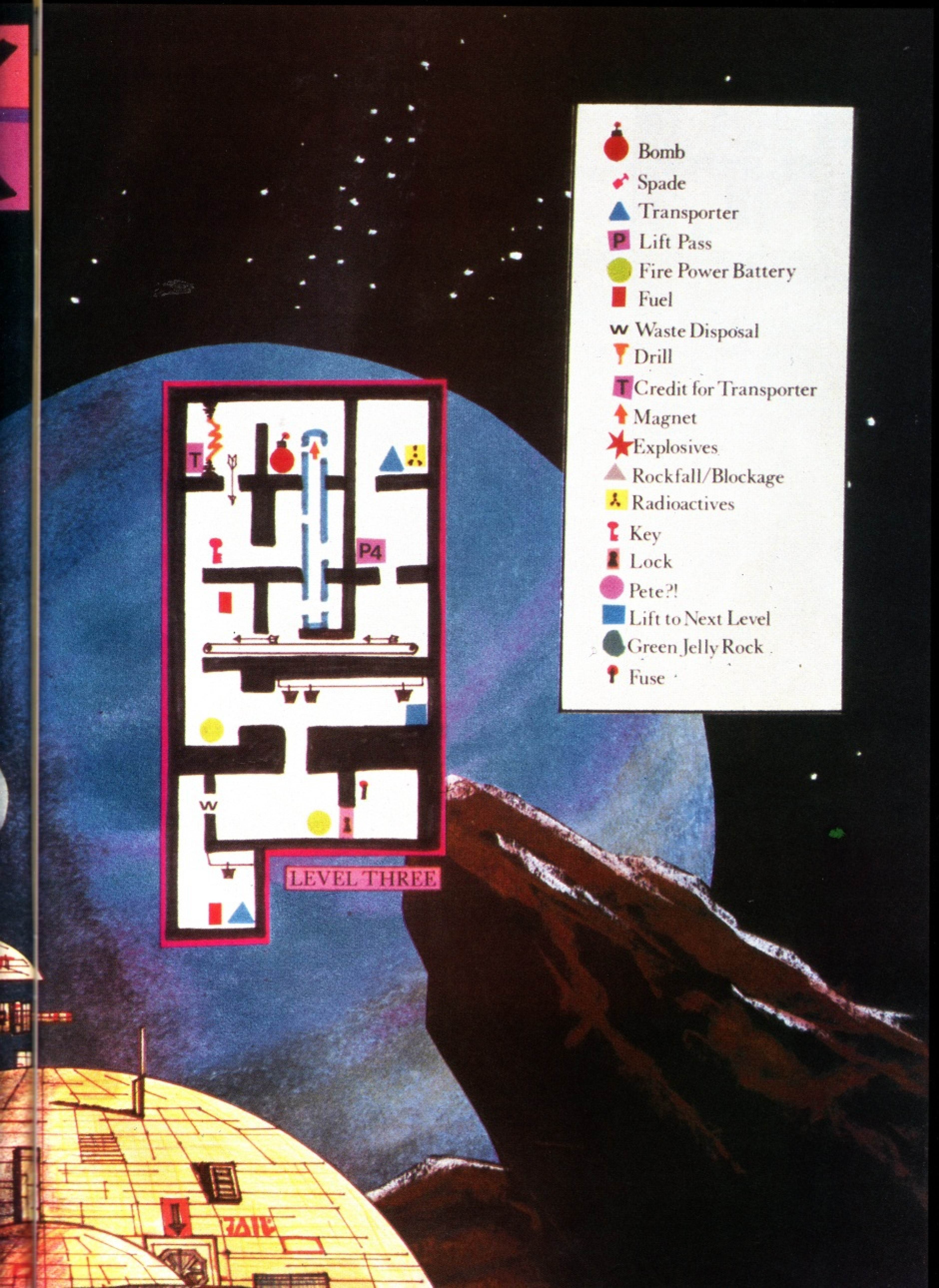
If you get really bored you can set the computer to fight itself, gambling on the outcome. In fact once you have defeated the champion you have to defeated the champion you have to do this to win your freedom – yes I've seen Sparticus as well.

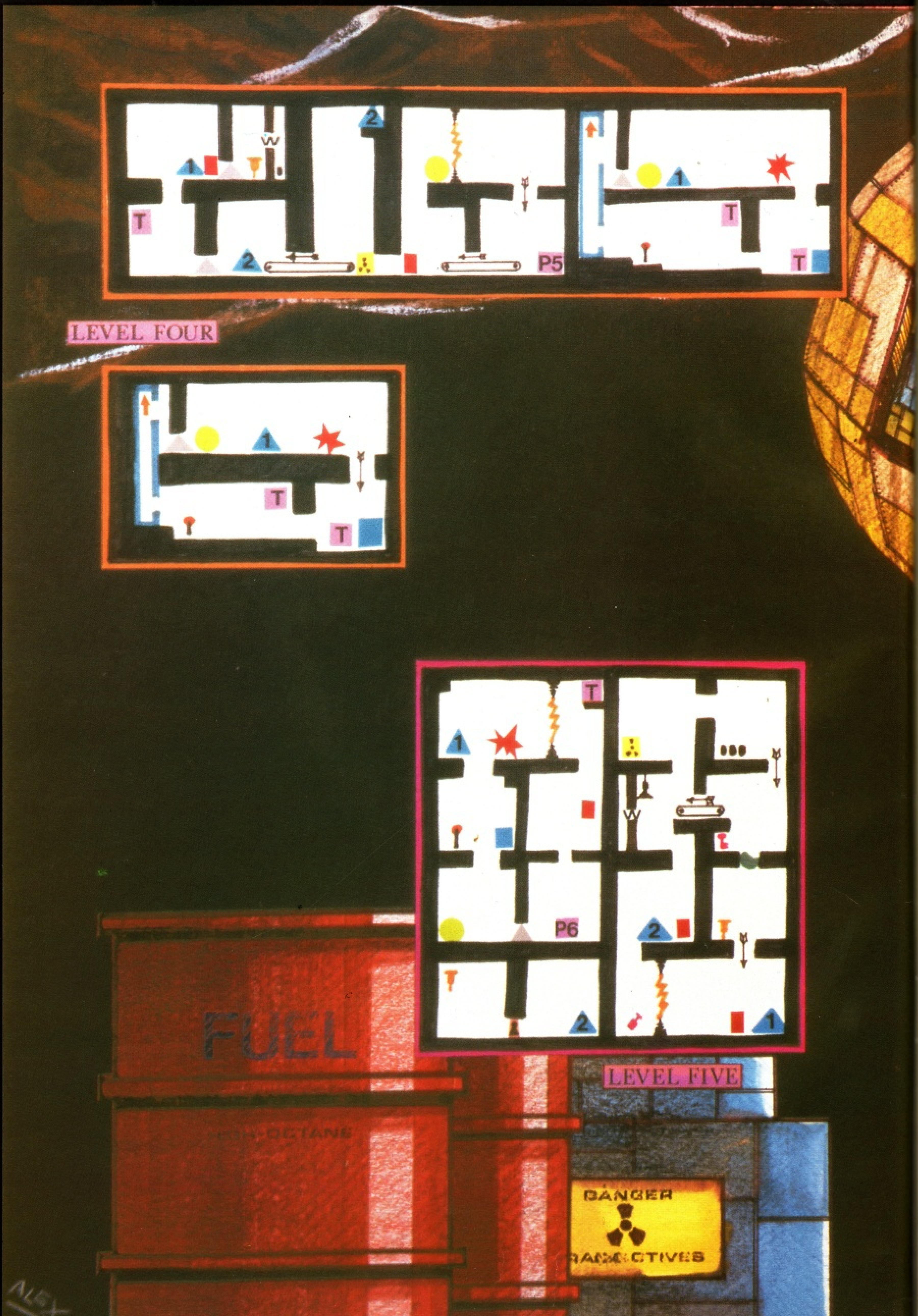
Gladiator is not a typical Domark game but it is good, there are elements of the other combat games but more of an atmosphere, but the thing which really sets it apart is the lack of hype. I look forward to seeing the finished program.

ACU

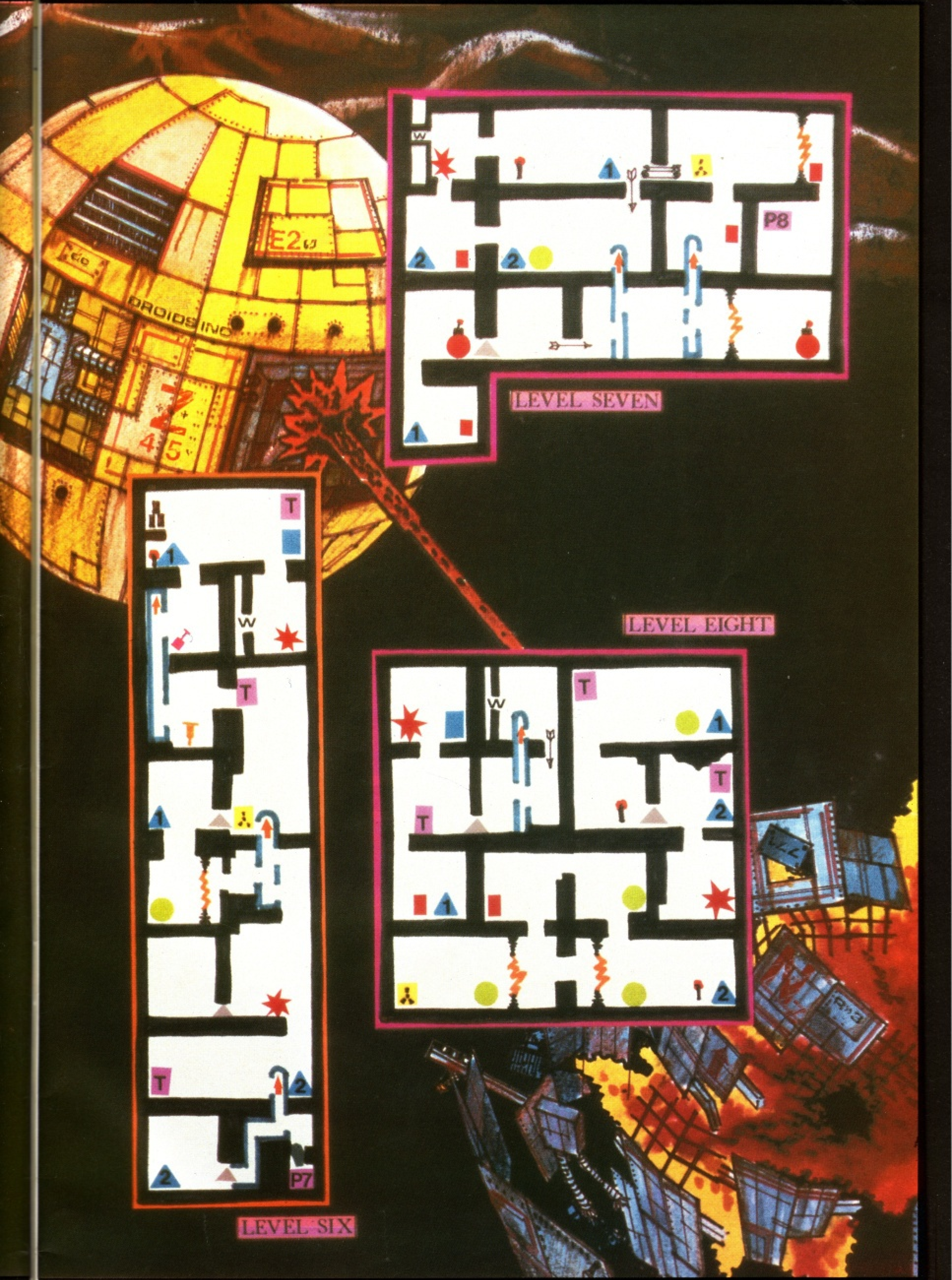
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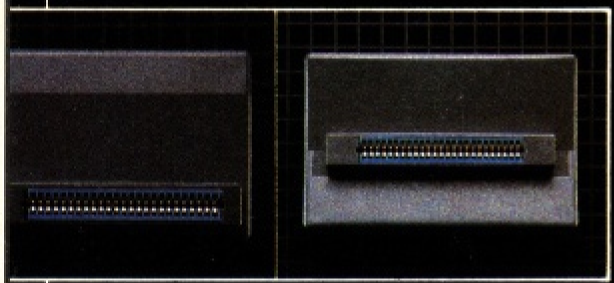
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- The memory expansions increase the Amstrad 464's internal memory to give a total of 128K or 320K. The 621's memory is increased to 320K. It is compatible with all DK'Tronics peripherals including the 256K Silicon Disc.
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- The software adds some BASIC commands which makes it possible to use the second 64K (or 3rd or 4th and 5th in the case of 256K) for storage of screens, windows, graphics and basic arrays. This ability means that you can write much larger basic programs and sophisticated programs that use pull-down menus with ease.
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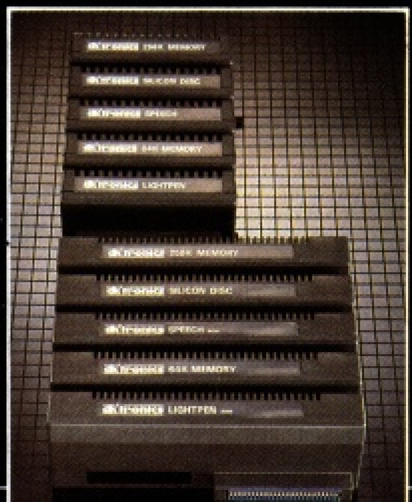
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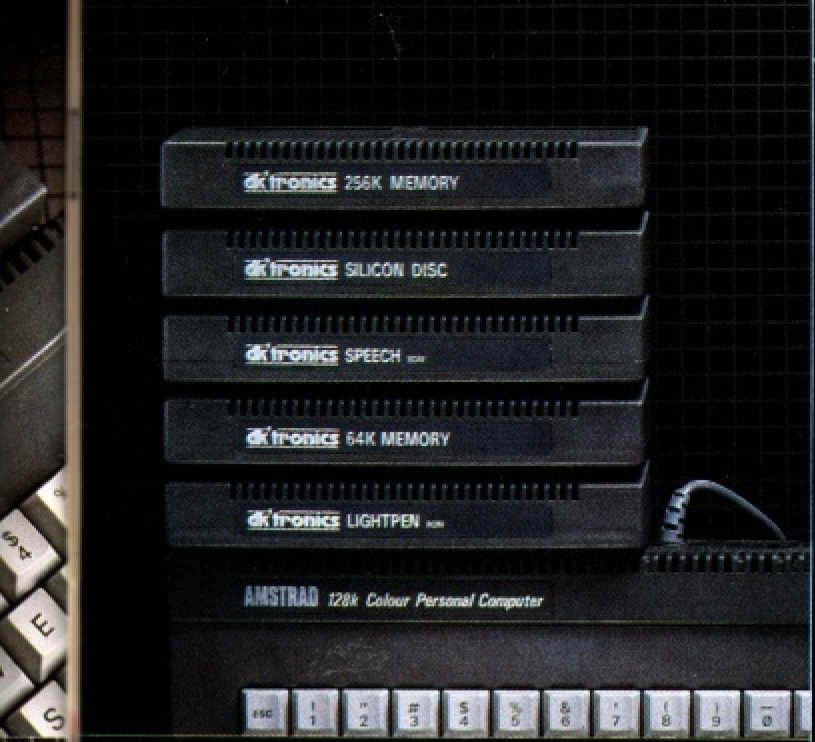




L E A D
FROM B

DK'Tronics have produced this ra
enlarge the potential of the 464
and have been designed to com



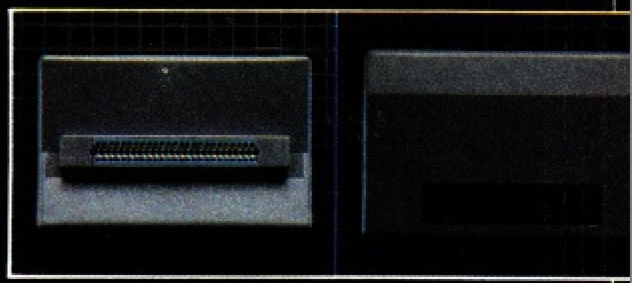




D/I/N/G BEHIND

s range of powerful peripherals to
464 and 6128 Amstrad Computers
compliment their style and colour.

GRAPHICS LIGHT PEN



The sophisticated graphics package includes a colour palette, nudge control for one pixel accuracy, brush choice, text handling and user defined characters.

It can magnify, shrink, colour fill and create circles, rectangles, lines and curves.

Complex pctures can be easily edited at pixel level using a scratch pad which is magnified to the full screen.

There is picture storage and retrieval, and a pen callibration utility and there is also an Amstrad/Epson compatible printer dump utility supplied on cassette.

There is a cassette version for the 464 and a ROM version for the 464 and 6128.

Cassette **£19.95** including VAT (464 only)
ROM **£29.95** including VAT (464 and 6128)

SPEECH SYNTHESISER



This simple to use speech synthesiser includes a powerful stereo amplifier and two high quality speakers which greatly improves the sound quality of the internal mono speaker.

It uses the popular SPO/256 speech chip and has an almost infinite vocabulary.

It is supplied with a text to speech converter software for ease of speech output creation. Everything you wish to be spoken is entered in normal english without special control codes or characters making it extremely easy to use.

The voicing of the words is completely user transparent and the computer can carry on its normal running of a program whilst the chip is talking. The speech output from the SPO/256 is mono and directed to both speakers.

There is a cassette version for the 464 and a ROM version for both the 464 and 6128.

Cassette **£29.95** including VAT (464 only)
ROM **£39.95** including VAT (464 and 6128)

HOW TO ORDER

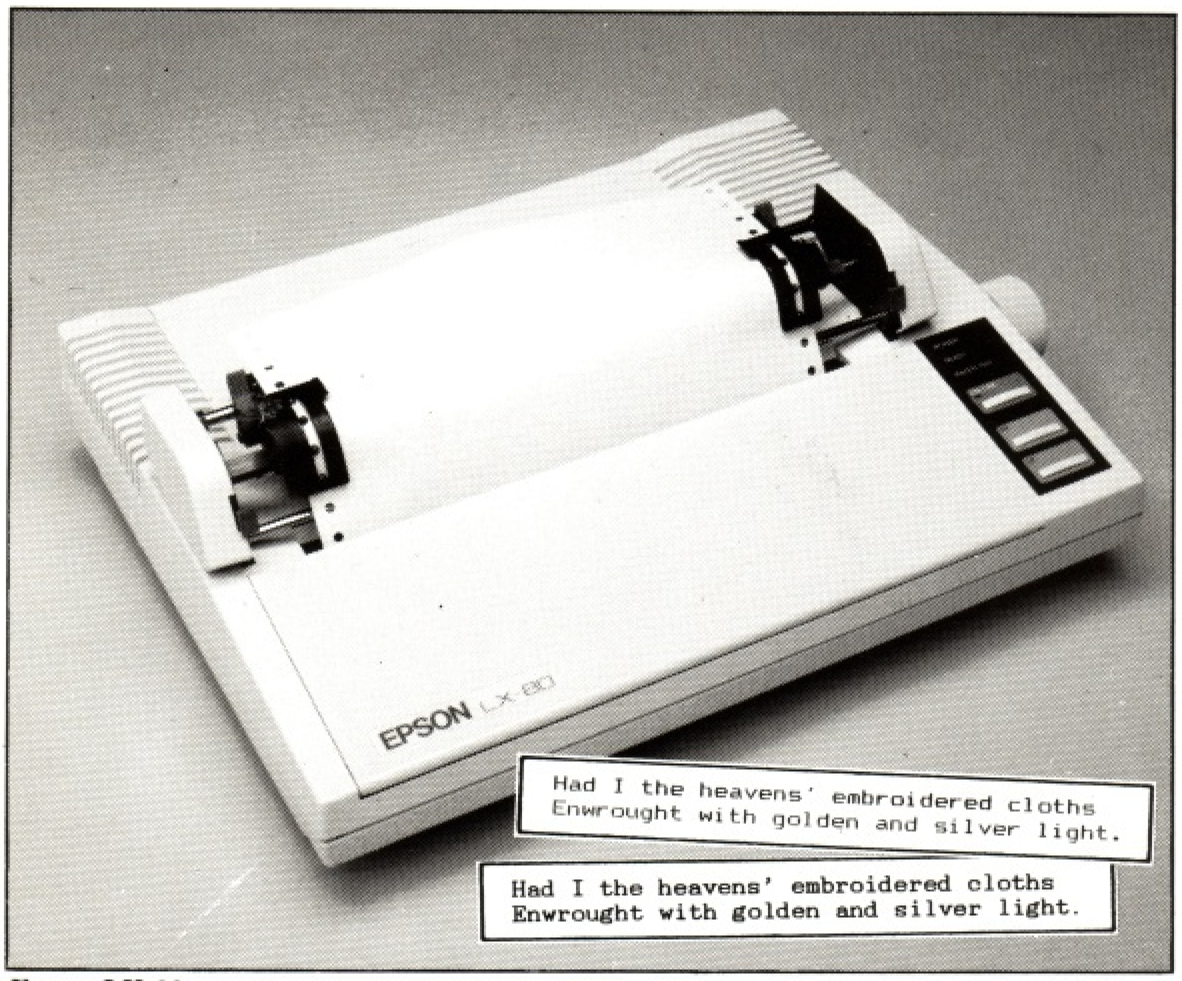
DK'Tronics products are available in all good computer stores but may be obtained by completing the order form below and returning it to DK'Tronics or by telephoning and quoting your Barclaycard or Access number.

Orders are normally despatched within 24 hours and if you have any further queries concerning our products do not hesitate to give us a ring or send us a large stamped addressed envelope for our latest free 84 page technical manual covering our Amstrad product range.

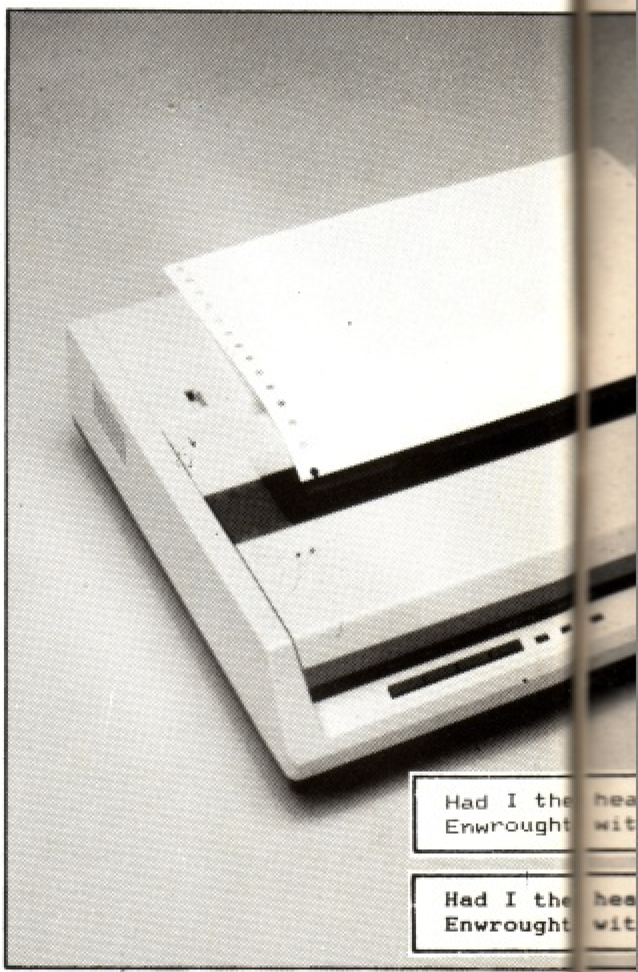
Please send me ______
Name ______ Signed ______
Address ______
______
______
I enclose Cheque/PO/Cash for:- Total ______
or debit my Barclaycard/Access number

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Epson LX-80



OKI Microline 182

Printers on parade

Dot matrix printers have improved dramatically over the past few years with the hottest competition in the sub-£300 area. Robert Schifreen looks at the three leading contenders

Buying a printer is just like buying a computer. Before deciding which model to buy, you have to ask yourself what you want it for.

There are three main reasons for buying one. Firstly, it will print out long program listings. Secondly, it will produce letters and correspondence. Thirdly, it will output graphics.

Graphics and letter-quality print are usually produced by application programs which will have installation procedures to tell the program what printer it is being used with.

Daisywheel printers, while producing super letter-quality characters, are usually pretty slow – unless you're willing to pay about £1,000 – and can't handle graphics. When dot matrix printers were first available the print quality was poor and you could clearly see that the characters were made up of dots. They were fast and cheap, so they were perfect for spooling off reams of listings. But they didn't produce very professional looking letters.

Nowadays dot matrix printers have a mode often called NLQ, or Near Letter Quality. The reason the manufacturers don't go all the way and call it Letter Quality is partly because, although they're good, they're not as perfect as daisywheel printers. The other reason is that they're saving the name LQ for a new generation of dot matrix printers that really will make daisywheel printing redundant.

For this review, I tested three dot matrix printers. Each is capable of graphics, and will also print in draft mode (fast) and NLQ mode (not so fast). Each costs between £215 and £275 for a model with a Centronics interface, capable of linking to any Amstrad micro.

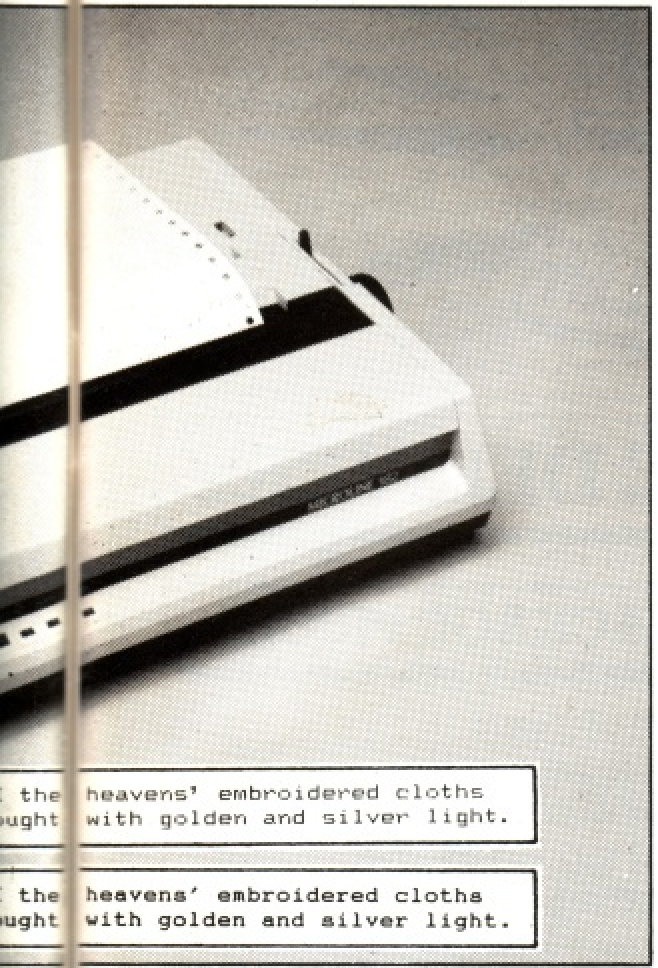
Having used many printers over a number of years, you get to like some features and despise others. I used to keep a list of which features impressed me on a particular model, and which were so annoying that they almost made me change back to an older printer.

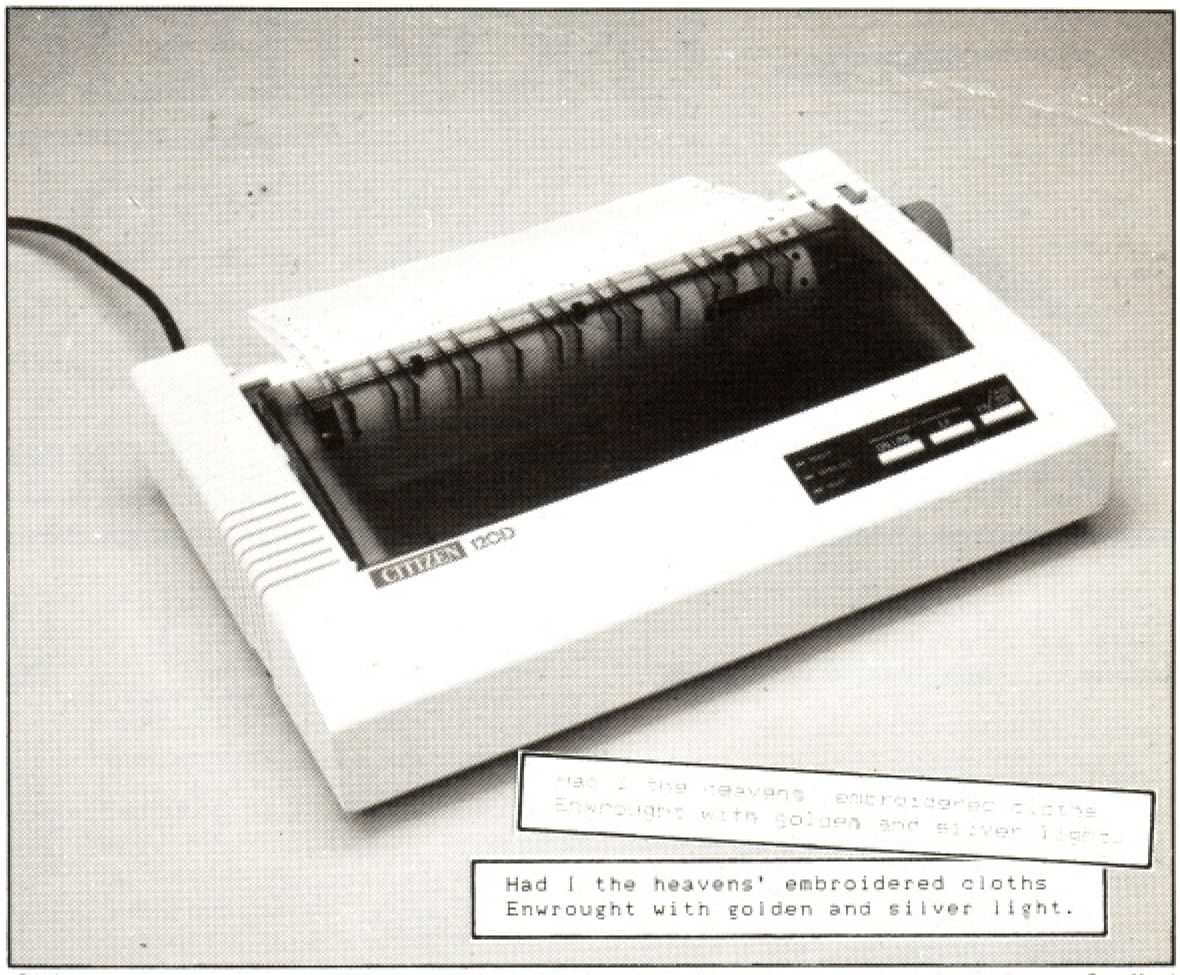
For this review, I dug out that list and applied each of its entries to the printers under test. The printers under scrutiny were the Epson LX-80 with tractor feed unit, priced £275, the Citizen 120-D at £235 and the OKI Microline 182 costing £215.

These are the official retail prices for the models tested. Like any piece of equipment, it is well worth shopping around. For example, one advertisement recently quoted an LX-80 at under £200.

Physical appearances

Each printer comes packed in a protective box with a manual and mains lead. Removing the packing revealed three good looking machines. The OKI is





Citizen

(Print samples: Top, draft mode. Bottom, Near Letter Quality)

the smallest and lightest of the three. Its tractor unit is built in and doesn't add to the total height of the printer. The additional tractor feed units on the Citizen and Epson models almost double their overall height.

Speed trials

The first thing I did after unpacking the printers was to test them for speed. Adverts usually measure print speed in characters per second. This doesn't take into account the time taken for a line feed – when the end of a line is reached and the paper has to be moved up through the printer by one line.

I produced a test file on a disc – the contents of my Telecom Gold mailbox. This file was around 11 pages long and contained some long lines, some short lines and one or two form feed characters (where the paper is advanced by one whole page).

I printed out this file on all three printers, both in draft and NLQ modes. All three print bidirectionally in draft mode. In NLQ mode, though, the Epson and Citizen print in one direction only. This is because NLQ print is produced by printing each line twice – one on top of the other – and there are difficulties in making sure that the second pass lies exactly on top of the first unless you only print in one direction. OKI, though, seems to have found a way round the problem – its NLQ print is bidirectional and shows no loss in quality. It also makes the machine much faster.

Incidentally, although the OKI is capable of NLQ print, it seems that the person who wrote the manual wasn't aware of the fact. The details were on a single sheet of paper inserted in the box so, if you buy an OKI, don't throw away the packing until you've checked it carefully.

	Draft mode		NLQ mode	
	Minutes	Seconds	Minutes	Seconds
Epson LX-80	6	27	25	33
OKI Microline 182	4	47	11	24
Citizen	4	54	19	16

Timing in minutes and seconds

Print quality

You can judge for yourself the quality of the output from the samples on this page. My opinion is that in the draft mode the OKI wins because the dots are closest together. But it's still easy to tell that the output was produced by a dot matrix printer.

For NLQ quality the Epson wins hands down although some of the diagonal lines are a little jagged. OKI's NLQ mode is second and, taking speed into consideration as well, may be a better deal than the Epson.

With the Citizen in draft mode it was easy to see the individual dots in the characters. Its NLQ typeface looks like the ones used to produce gas bills, for example, and I wasn't a great fan of it. Before you completely rule out a Citizen, though, see the section on graphics.

Documentation

Printer manuals have always had a bad reputation. If a subject was important it probably wouldn't be in the manual, and if it was you wouldn't be able to find it.

Epson started the ball rolling in producing decent documentation, and it's clear from looking at other manufacturers' efforts that they have studied Epson's theories in detail.

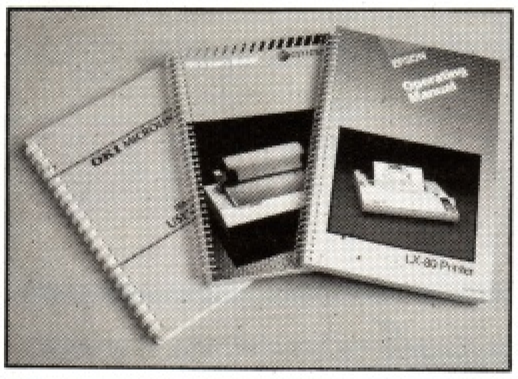
The quality of English in the Epson

and OKI manuals is reasonable. Citizen's was translated from Japanese, and many sections have lost a lot in translation.

The Citizen and Epson manuals assume that the printer is going to be used by a Basic programmer. All the examples are in Microsoft Basic (à la IBM PC). The OKI manual is similar, but does have a chapter on installing the printer specifically for Wordstar, Visicalc, Superwriter and Supercalc.

Epson has a chapter on using the LX80 with certain computers and is the only one with a troubleshooting section in case the printer doesn't always do what the manual says it will.

For me, the most useful part of a manual is the index at the back. Having the information in the manual is one thing, being able to find it is another. The OKI manual has no index so relying on



The manuals

the contents list at the front will get you nowhere fast. The Citizen manual is a little better, with a pull-out reference card at the back. This contains a very brief note on each command, and a page reference too.

Epson's manual is the best. While the information may not be arranged in the most logical order (DIP switch settings are at the back, for example), the index is quite good and contains a full list of all commands. There's a pull-out reference card too, though this one doesn't have a page number reference on it.

DIP switches

DIP switches are the tiny switches you need to set according to certain characteristics of your micro, such as whether an extra line feed character is added to carriage returns. You can also specify such things as the size of paper you are using, whether you want the buzzer to sound when the machine runs out of paper and so on.

You'll set the DIP switches when you first buy the printer and will never need to alter them, unless you have more than one machine, or you want to change the settings occasionally. This used to be easier said than done, as Epson was infamous for putting the DIP switches in such a place that you had to take the printer apart to alter them. What's more, any optional interface boards that you had installed would need to be removed as well.

Luckily, things are now easier. The switches on the Epson are at the back of the printer. With the Citizen, they are on the pull-out interface and on the OKI you have to remove a small cover at the back of the machine to reveal them.

Ribbon life

If you plan to use your printer frequently you'll want one with a long ribbon life. All three ribbons are in throw-away cartridges which are easy to replace but fairly expensive. All are quoted at being able to print around two million characters None is re-inkable.

Paper feeding

All three printers were fairly easy to load with paper. The OKI, though, has a lid through which the paper passes on its way out of the printer. This means that you can't really lift the lid to see what's happening while the text is being printed as you have to wait until it has moved up by around six lines before the print passes out through the lid.

Once the paper has left a printer, it seems to have a mind of its own. According to the shape of various devices on top the paper will curl up in front of the printer, or behind it, or will get tangled and start to feed itself back into the printer and jam up. This latter case describes perfectly the Epson LX80.

With continuous paper, it's very hard to keep it coming out smoothly without giving it a helping hand after every page or so. When printing a long document I didn't feel confident enough to leave the machine unattended. The same goes for the Citizen, although this machine was quite happy as long as you didn't mind the paper coming out and piling up behind the printer. Trying to make the paper feed out forwards was difficult.

Only the OKI gave me enough confidence to leave it printing, happy that it would not tangle up its paper. What's more, it is the only printer with a straight edge to the lid that lets you tear off the paper once the job has finished.

Noise

In a quiet room or office, any printer sounds noisy. It's not so much the actual amount of noise it makes that bothers people, but the pitch. A high noise is easier to hear, and the Epson's was the highest, OKI was the lowest. Even so, with any of the printers going, I could not comfortably carry on a telephone conversation in the same room.

Graphics

Each machine allows you to produce graphics and special characters, Graphics mode means that, instead of printing whole characters that are made of dots, you can control each dot individually to make your own designs. Some applications programs use this facility to produce graphs, for example, though doing it yourself from Basic is time consuming.

It is well known that the Amstrad micros have only a 7 bit parallel interface. This means that Ascii characters with codes greater than 127 cannot be sent to the printer. This is not normally important when printing text, but is crucial with graphics. If you intend to produce your own, you will need to consider a printer that can control the eighth bit. What this involves is having a command on the printer which basically says: "Until I say otherwise, add 128 to all the Ascii characters that I send". So to send a character 129 you would send the eighth-bit command followed by a character 1.

Only the Citizen printer has this feature, which should be borne in mind if you intend to do a lot of graphics work. The Citizen and Epson printers allow you to set various typestyles by tapping out various combinations on the control panel.

The OKI's most useful button is TOF, which stands for top of form. Pressing this tells the printer that it is at the top of a sheet, so it can then work out where the bottom of the sheet is in word processing. Without this button, you have to turn the printer on and off again to set the top of form position.

Buffers

The Citizen has the largest buffer fitted as standard. It will store about a minute's worth of text after the computer has finished sending. The Epson and OKI printers store only a couple of lines.

The verdict

I started by saying that before buying a printer you have to know what it's going to be used for.

If it's mainly for producing letters and correspondence, the Epson's NLQ is the best of the three.

For printing mainly program listings, or where quality is not vital, the OKI wins on speed and performance. A very impressive printer, and good value.

For general printing purposes, again I would say that the OKI represents the best value for money. Its NLQ face is only very slightly inferior to the Epson's and the printer is a fast all rounder. However, its commands are not as widely used as the Epson standard, and some applications software may not support them.

The Citizen is good, and fits comfortably between the Epson and OKI. Its main advantage is being able to control the eighth bit, which is essential for graphics.

ACU

GALLUP SOFTWARE CHART

	TITLE	PUBLISHER	Last month		Months in chart	Market strength
1	**BATMAN**	Ocean	new	▲	1	1000
2	**GET DEXTER**	PSS	5	▲	2	951
3	**COMMANDO**	Elite	15	▲	2	842
4	**SPINDIZZY**	Electric Dreams	3	▼	3	727
5	**THEY SOLD A MILLION (2)**	Hit Squad	7	▲	2	717
6	**LAST V8**	Mastertronic	1	▼	3	680
7	**INTO OBLIVION**	Mastertronic	2	▼	2	624
8	**TOMAHAWK**	Digital Integration	new	▲	1	545
9	**TURBO ESPRIT**	Durell	9	▶	2	509
10	**COMPUTER HITS 10 Vol. 2**	Beau Jolly	6	▼	3	479
11	**WINTER GAMES**	Epyx/US Gold	new	▲	1	467
12	**FORMULA ONE SIMULATOR**	Mastertronic	8	▼	8	461
13	**BOUNDER**	Gremlin Graphics	new	▲	1	418
14	**BOMB JACK**	Elite	new	▲	1	406
15	**SABOTEUR**	Durell	14	▼	2	388
16	**ZOIDS**	Martech	new	▲	1	351
17	**WAY OF THE TIGER**	Gremlin Graphics	4	▼	3	339
18	**ALIEN HIGHWAY**	Vortex	16	▼	2	327
19	**FINDERS KEEPERS**	Mastertronic	10	▼	11	322
20	**CAVES OF DOOM**	Mastertronic	12	▼	7	320

READERS' Chart

Your chance to vote for your favourite games.

This is the second month of our readers chart where you get to vote for the games you think are best, not just the ones that make the Gallup chart. We haven't had a full month's response to our first chart but by the next issue we should have things running smoothly.

We don't want votes for games that aren't available yet, any of these will be disqualified. Last month we published the Editor's Top Ten all time favourites, this month it's Alex's turn.

There is a prize for the first form pulled out. This month we have awarded a prize of a Dk'Tronics speech synthesiser to Mr A. Watson, of Inverness, Scotland.

Don't forget to vote for the Amstrad Turkey, the worst game you've seen on the Amstrad.

Alex's All Time Top Ten

1. Sorcery – *Virgin*
2. Tomahawk – *Digital Integration*
3. Tankbusters – *Design Design*
4. Starquake – *Bubble Bus*
5. Equinox – *Mikro Gen*
6. Batman – *Ocean*
7. Marsport – *Gargoyle Games*
8. Defend or Die – *Alligata*
9. TLL – *Vortex*
10. Bruce Lee – *Ocean*

Amstrad Turkey Award –
3D Invaders – Amsoft

VOTING SLIP

You only get three votes – please use them wisely. The first form pulled from the hat wins a prize.

Game 1 ______________

Game 2 ______________

Game 3 ______________

Amstrad Turkey ______________

Name ______________

Address ______________

____

____

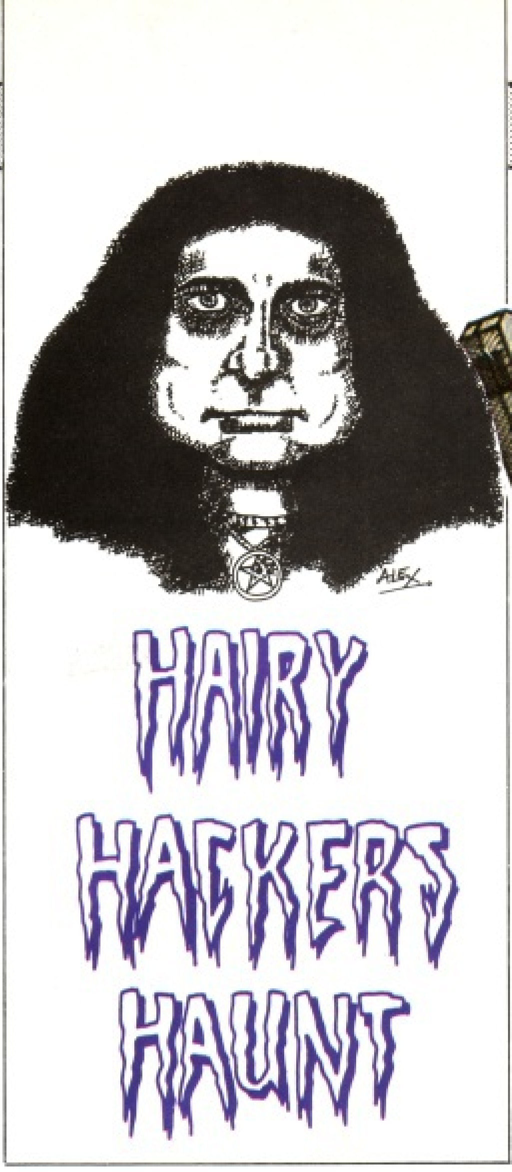
____

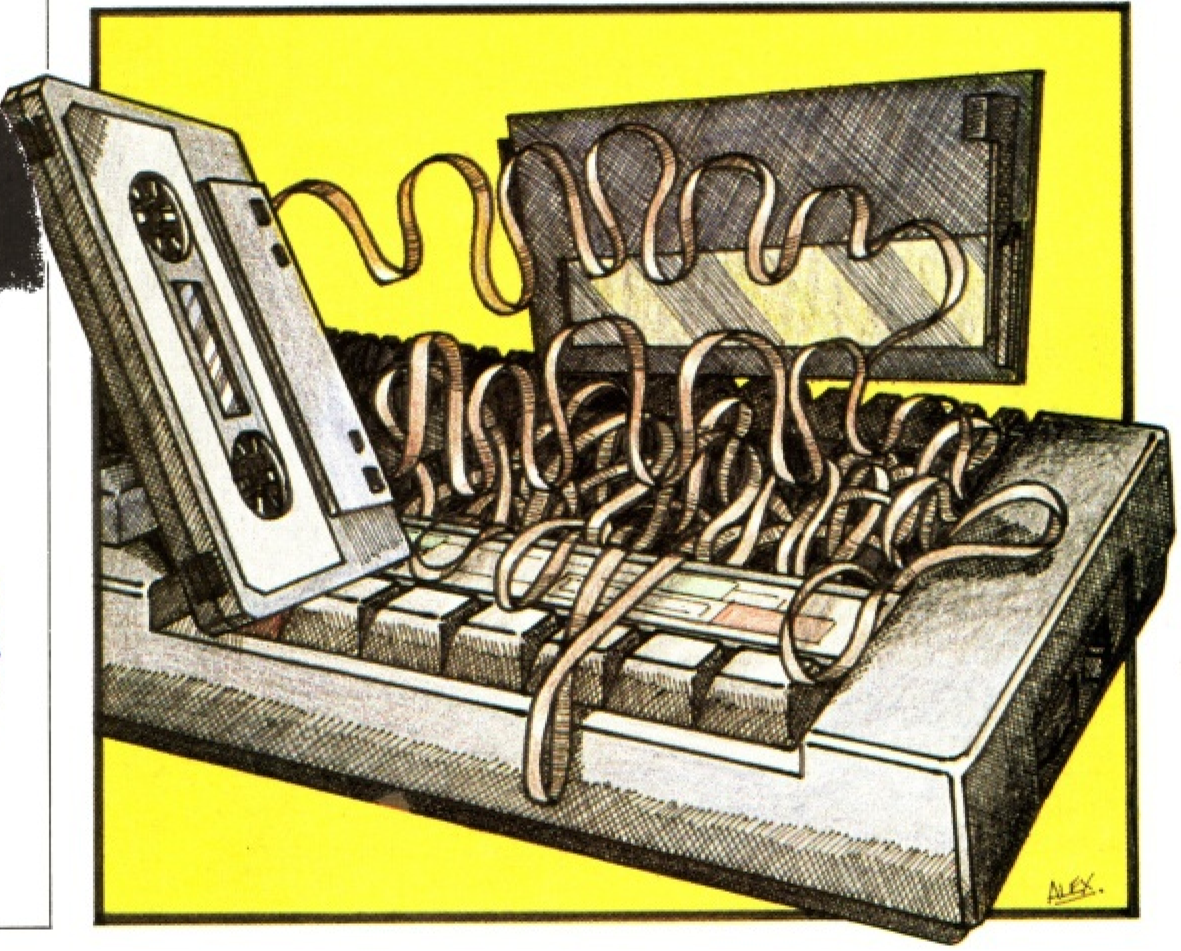
____

Age (optional) ______________

August Chart
1 Commando
2 Rambo
3 Covenant

Alex says send your votes to:
169 Kings Road, Brentwood, Essex CM14 4EF.





Printers, pokes and proggyettes

VAX, the man with the axe carries on his mad hacking

As I sit here, among the mugs of soup, beer cans, pussycats and old copies of *ACU*, I study my joint (the one I have just made with my soldering iron) and rejoice. It is now three months and the Runcorn Hospice for the Slightly Bonkers have not tracked me down yet, so prepare to endure another column by the Hairy Hacker. Serves you right for buying *ACU*, dunnit?

Nonterraqueous has been about for a little while, and so has this poke, sent in by someone who can't spell infinate (sic). Don't forget to wind past the loader:

```
1 REM Cheers to P.R. Fowler, from yonks
  back.
10 INK 0,0:BORDER 3:MODE 0:OPENOUT"!":ME
   MORY 2999:LOAD"!",3000
20 CALL 3003,&FFFE,16383
30 CALL 3003,40956,37000
40 POKE &1E08,0: REM Infinite bombs
50 POKE &1080,&C3


60 POKE &1081,&97
70 POKE &1082,&10: REM Infinite psyche
80 POKE &10BA,0
90 POKE &1000,0
100 POKE &10BC,0
110 CALL 4000
```

As happens from time to time, this type of infinite lives poke can kill you. That is, you can get caught in a situation that would normally kill you outright, but now keeps on killing you until your Z80 decomposes.

Now a little proggyette to churn all the output to the screen out on a printer. This means everything, including control codes, so when the screen clears you will get a form feed. You run it (save it!) and then use |SPON and |SPOFF to turn the screen print on and off. I'll let you figure out which does what:

```
1 REM * Screen to printer program.
2 REM * Written in desparation, BASIC &
  Z80 by VAX.
3 REM * Use |SPON to start printer,
4 REM * and |SPOFF to stop it.
5 REM * Wups ! Didn't mean to tell you t
  hat.
6 REM
9 OPENOUT "!d":MEMORY HIMEM-1:CLOSEOUT
10 MEMORY HIMEM-112:i=HIMEM+1: REM *** A
   ddress for patch
15 ini=i
20 READ a$:IF a$="END" THEN CALL ini:END
30 IF a$<>"*" THEN POKE i,VAL("&"+a$):i=
   i+1:GOTO 20
40 READ a$:v=ini-&4000+VAL("&"+a$)
45 IF v<0 THEN v=1+NOT v
50 POKE i,v-256*INT(v/256):POKE i+1,INT(
   v/256)
60 i=i+2:GOTO 20
1000 DATA 01,*,400a,21,08,00,09,c3,d1,bc
1010 DATA *,4016,c3,*,4020,c3,*,403c,00,
     00,00,00,53,50
1020 DATA 4f,ce,53,50,4f,46,c6,0,21,d9,b
     d
1030 DATA 11,*,406c,cd,*,402f,21,d3,bd,1
     1
1040 DATA *,4060,06,03,4e,1a,eb,71,12,eb
1050 DATA 23,13,10,f6,c9,21,*,4060,3e,c3
1060 DATA 77,23,11,*,4059,73,23,72,21
1070 DATA *,406c,3e,c3,77,23,11,*,4063
1080 DATA 73,23,72,c3,51,bb,e5,f5,cd,2b
1090 DATA bd,f1,e1,c3,*,4059,e5,fe,1f,f5
1100 DATA dc,2b,bd,f1,e1,c3,*,4063
1110 DATA END
```

Hackers may be interested in line 45, which has my version of how to stop a well-known problem with Basic. All hex

numbers above &8000 get turned negative when you un-hex them. My bit turns them positive in a cryptic fashion.

For those with hacked joysticks, here are a few second-fire pokes:

Soul of a Robot:

```
10 INK 0,0:BORDER 0:INK 1,24:INK 2,12:IN
   K 3,6:OPENOUT"":MEMORY 999:LOAD "!",1
   000:CALL 1003,&FFEE,16383:CALL 1003,4
   1500,40000:POKE &083C,&10:POKE &0844,
   &4D:CALL 2000
```

This puts your jump increase or decrease on the second fire button.

Covenant:

```
10 MODE 0:MEMORY 4999:LOAD"!COVENANT":PO
   KE &2C12,&4D:POKE &2C76,&4D:POKE &2D9
   F,&4D:POKE &2DB2,&4D:CALL 10887
```

That one lets the score screen switch out on the second fire, so that you can boost your ego more regularly. If anyone is interested in converting the Quickshot II joystick to dual fire, drop us a line and we may make an article of it.

Now here's some stuff from a hacker who really knows where his breakpoints are, none other than Stewart C. Russell of Glasgow, d'ye ken? His contribution to the column rates the accolade of Hack of The Month. So, Stewart, send a letter by Royal Snail to me at The Hairy Hackers Hovel and tell us what games tape you would like as a bribe, er, reward.

Any rookie hackers reading this might like to try their luck next month, eh?

Winning the easy way

The hack in question is a little life-lifter for Who Dares Wins II. To use it, RUN the tape as per normal. Stop it after the peedleplingplung noise and hit Esc. Type or load the following program (without resetting it, twit!), RUN, and all will carry on as before but with an awful lot of men and grenades. Now any wally can make it to the enemy HQ. Here's the clever bit:

```
80 REM The first hack of the month to
90 REM Mr. Stewart Russell.
100 MODE 1
110 FOR s=0 TO 46
120 READ a$
130 POKE &C7D0+s,VAL("&"+a$)
140 NEXT s
150 CALL &C7D0
160 DATA 21,40,00,11,30,60,3e,63,cd,a1
170 DATA bc,d4,00,00,21,70,60,11,90,50
180 DATA 3e,11,cd,a1,bc,3e,00,32,c1,60
190 DATA 3e,00,32,1a,63,c3,10,a0,53,43
200 DATA 52,33,2f,32,2f,38,36
```

By the way, this one doesn't get on well with Maxams and the like. You will doubtless hear more from the hacking Scotsman, he has many more POKEs in his sporran (almost a poke hero, geddit? Poke, sounds like folk. Never mind).

Some of you may have acoustic couplers on your modems. If you have a Hayes-compatible, auto-dial, auto-answer, self-scanning, WS4001 thing, go read a more upmarket column, otherwise here are some tips.

Put it on top of a towel. All hackers have to know where their towel is. Towels are immensely useful things, you can wrap them round you for warmth, put them round your head to ward off the ravenous Bugblatter Beast of Traal or even dry yourself with them. They also stop vibrations travelling through the table from heavy lorries, furious pounding at the keyboard and eggs exploding in the microwave, up into the modem.

Pubs leave just the right sized towels on top of the bar, but have the courtesy to buy a pint or two first (before asking, of course).

Well done ZZ

This is something from that highly professional poker ZZKJ, who really knows where his towel is. This month his offering to the Great God Glitch is a way of mangling Fairlight. It don't mean taking an axe to your synthesiser.

This little program should solve any problems you may be having with the game. These are the options which it gives you. First, no loss of energy from contact with the bad guys, none of the doors are locked anymore and there are no longer any carrying weight restrictions. Although you can still only carry five items, these can be anything – even five barrels (they weigh a tun).

The next option, which is my favourite, allows you to see the rooms as they are being drawn. This makes the game look less like it's crashed and you can see that Bo has got one hell of a fast fill routine! Next is the option to blindfold the baddies, which means they wander around completely oblivious to your presence, or do nothing if they normally chase you.

The last pokes make the list of objects shift over to the left hand side of the screen for those who prefer to have all your character's info in one place. The only problem with this is that the start up screen listing your control keys gets shifted to the right a bit. So, when the game starts up and you notice the screen is not as it should be, don't panic!

Here's the business end:

```
10 'FAIRLIGHT HACK BY ZZKJ for ACU.
15 'DULY SNAFFLED FROM THE ED. FOR THE
16 'HAIRY HACKERS COLUMN
20 OPENOUT"D":MEMORY 1660:MODE 1:INK 0,0
30 INK 1,2:INK 2,25:INK 3,6:BORDER 0
40 LOAD"!PIC",&C000:LOAD"!FCD",1661
50 FOR N=40000 TO 1E+09:READ A$
60 IF A$="END" THEN CALL 40000,1267
70 POKE N,VAL("&"+A$):NEXT
80 DATA A4,5A,5A,4B,4A,21,40,9C,11,5F
90 DATA 9C,06,43,1A,CB,41,28,03,86,18
100 DATA 01,AE,12,1C,10,F3,23,0D,F2,48
110 DATA 9C,84,F8,A5,54,F8,E9,A4,6E,D4
120 DATA 08,3F


130 DATA BD,63,B9,25,82:'NO ENERGY LOSS
140 DATA 84,AE,F0,B5,A7:'NO LOCKED DOORS
150 DATA BD,A7,B9,49,FE:'NO WEIGHT LIMIT
160 DATA BD,AC,B9,17,97:'SEE ROOM DRAW
170 DATA 84,33,FF,B5,AC:'BLIND BADDIES
180 'THE NEXT THREE LINES OF DATA MOVE
190 'YOUR LIST OF OBJECTS TO THE LEFT
200 DATA 84,6E,DE,B5,83,4E,B5,06,A4,E8
210 DATA 33,08,2C,5B,BD,4F,08,FC,B6,4C
220 DATA A0,08,2C,0D,87,5B,08,FC
230 DATA AE,6F,DE,END
```

Anyone typing this into a PCW8256 is going to have fun trying to load the tape.

In the usual way, key it in, save it for future use and delete any lines containing any features you don't want. For instance if you don't want all doors unlocked, delete line 140. If you don't want to have the objects on the left, delete lines 180 to 220 inclusive. You can delete as many of the program's features as you like, as long as you don't touch lines 10 to 120 and line 230. When you have all that you want, just RUN the program and play the tape from the start. The game will now load and play as normal – except for the added features.

Two quickies before I go. Number one is from Colin at Firebird, who says that if you hold the keys T H I N G down, you get a much better survival rate. Quickie number two is that the same happens in Three Weeks in Paradise if you hold down the keys K A T H. Does anybody else know any more like this that they wish to share?

Well, that's all folks! (© 1957 Looney Tunes Ltd). I leave you with the verbage off the sticker on my BT approved modem: Hackers do it down a 'phone line.

ACU

Making s

Now you can connect your CPC to a whole host of musical instruments. David "Dolby" Radisic looks at the Midi interface from Electromusic Research

The computer world has RS232, a standard which means that any bit of equipment can be connected to any other. Even if it isn't standard most computers have an RS232 interface as an option.

The music world has its own standard – Midi, which stands for Musical Instrument Digital Interface. Midi instruments can be networked, so that they can all be controlled from a central computer. This may mean that you can play a drum machine from a synthesiser keyboard or one keyboard from another.

Going on first impressions Electromusic Research, who designed the EMR Miditrack, have done a very good job. Although I have come to disregard first impressions I was not wrong with this interface and software. I thought the manual was very brief and didn't really go into enough detail in most areas, but they do tell me there is a booklet which does just that, called Midi, Micros and Music, which gives a good description of using Midi instruments with computers.

What you get

The interface consists of two small plastic boxes connected through a small length of ribbon cable. This allows the main interface to lie flat on the table without putting too much strain on the micro's edge connector. It also solves the problem of designing a box which fits the back of a 464, 664 and 6128. Unfortunately there is no through connector so the interface cannot be used with a 464 and disc. I suppose that EMR assumes that if you have a 464 you will be using the tape-based software.

After setting up the interface and turning on the computer, and of course running the software, just to see what happens, an orange, pink, blue, black and white screen appears containing six windows and a flashing right-facing-arrow (the cursor).

In the square window . . .

The layout is neat and tidy with the bottom of the screen contain-



sweet music with Midi

ing a wide three-line Response window giving information on all that happens. If a directory is asked for, rather than the complete directory whizzing through a line at a time is displayed and a key press steps to the next line giving you time to read each entry – very neat.

The left-most window has six columns of information for each of the eight tracks. This includes, from left to right, Play which sets whether the track is being used or set to "mute" (off) and Channel, which allows each of the tracks to be set to an individual Midi channel. This means the data will be sent to only those instruments set to that particular channel, that is, instruments could receive exactly the same data or entirely different data from each of the other instruments depending on their channel settings. A four-channel polyphonic synth, for instance, could have four individual tracks playing different voices or combinations of tracks to give an orchestral effect.

The next in the line-up is Loop which is very good for base-lines or rhythm generators as a track can be set to loop either a number of times – from once to 254 times – or set to loop continuously. The Control feature can be used to select what type of information is retained from your Midi instrument. If you happen to be one of those lucky people who have access to a DX1 with pressure sensitive/after touch and all that, then you can select to save everything (this does however eat up the memory very quickly) or to save on memory store just the notes played. Pitch follows Control and is a very nice feature allowing transposition, if your instrument can handle it, of notes in a nine octave range in steps of between –12 and +12 semitones.

The last column in this window isn't selectable by the user and is only used during Playback or Record mode and shows which tracks are in operation by flashing



a blob opposite the track number.

Below this Track window appears two smaller windows showing the amount of free space available for storage. The manual says 8100 notes can be stored with no velocity and 6500 with velocity – pretty good going. The other small window shows the Stopbar or last bar in current Playback or Record. This can be anywhere from 1 to 999.

The right part of the screen consists of another window, split in two. The right-hand half holds the selections for disc or tape such as directory, verify, load and save data. The left section contains a Metronome which, unlike Rainbird's TMS system, doesn't act like a real metronome swinging to and fro, but you can't have everything! This can be set up to output to Midi channel 1 at any velocity and pitch setting.

Count-in – obvious really – gives up to nine beat count in (you know, a-one a-two a-three altogether now . . .) Below this is a clock which doesn't tell the time but has selection for connecting an external clock (Sync-out signal) from any Midi interface, or you can stick to the internal EMR clock. Tempo settings allow between 40 and 360 beats a second, Plays enables the composition to be played from one to 254 times or (if set to 255) can play continuously. The Time signature – another obvious one – can be set from 1/4 timing to 9/4 timing. Last in the window comes Start bar which allows you to start playing from any bar from 1 to 999.

Up and running

Well, that's the layout and operation of the software dealt with. Now let's get down to the nitty-gritty of using the stuff. Linking up the EMR to my Roland JX3P was quite easy, although the 5-pin DIN leads I had were mirror wired whereas the EMR manual says "The wires should not be mirror wired". A quick trip to my local Tandy shop sorted that problem out. Once this was all connected (my set-up included a drum machine and bass line unit) I went through the "getting started" section of the manual that mainly relies on three demos included on the disc. These include Spycatcher by Mike Beecher, Sky by Mike Beecher again, and a little tune that my set-up couldn't do justice to as much as it tried – Beethoven's Moonlight Sonata.

Each of these has a small piece of text displayed in the lower window explaining what each of the eight tracks were set up for. Beethoven consists of tracks 1 and 2 followed by 3 and 4 set up for the piano solo, track 5 for the double bass, track 6 for the flute, 7 for strings and 8 for the brass. My little trio of instruments played together very well with



the JX3P doing each of them individually but because I had no eight-track recorder I didn't get to hear them all together. Why couldn't anyone have lent me more synths, such as the DX1?

After about an hour of listening to individual tracks and messing about with the demos I decided to venture into deeper water and try my own compositions. Now I'm no Peter Gabriel or Jean Michel-Jarre but I got some very good music out of it all, especially when I got the hang of the Arrange function. This enables you to make up to 64 different arrangements of the tracks for recording. Because this was such a nifty feature I decided to try and scrounge a multitrack recorder off one of my friends. I managed to find a four-track – better than nothing I suppose – and started recording my compositions almost immediately. The Arrange feature gave me the ability to record pieces which were longer than I had actually played, by allowing me to make different arrangements from each of the tracks. It is a very interesting feature and I used this quite a lot.

There is another feature I found that I thought was needed – especially with my playing – Time correction. This corrects the length of notes as they are recorded and so the playback sounds a lot better.

Having considered this a great deal I have just thought of a nice addition to the EMR range – a track editor. One thing I found was that if I mis-keyed I would have to start playing from the beginning but if an editor was available then changing individual notes would be easy and also this would mean a printout of the music could be made which could even lead to full Fairlight CMI capability. Oh well, the system as it stands is a very good one and gets 10 out of 10 from me. I look forward to any future products from EMR as they are bound to be as good as, if not better than, the Midi.

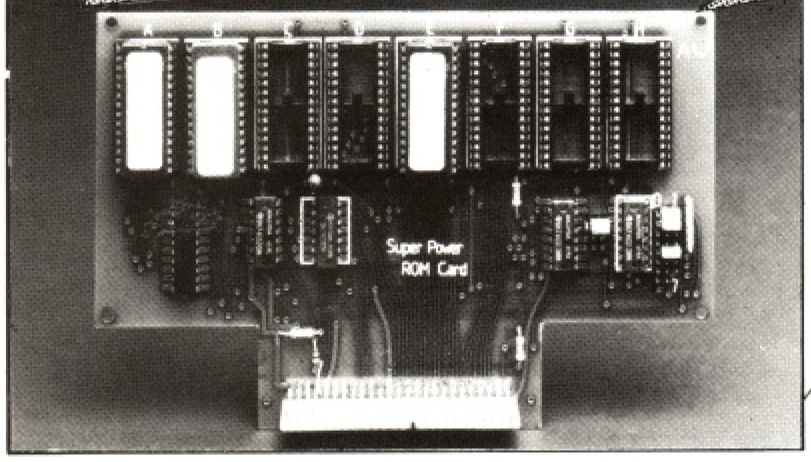
I certainly enjoyed using the system quite a lot and didn't really want to part with it upon finishing the review – I will definitely buy one now. So the only conclusion I can come to is that if you're looking for a Midi for your Amstrad this is a very good set-up and works very well with Rolands and Yamahas. I didn't get the chance to test anything else myself but the Midi standard should ensure that everything else will work. The end result I had was some very good compositions.

The EMR Miditrack is available from Electromusic Research, 14 Mount Close, Wickford, Essex, SS1 8HG. (0702) 335747. The interface and software costs £129.95.

The other equipment was kindly loaned by Monkey Business, (Musical Equipment), 66 Victoria Road, Romford, Essex RM1 2LA (0708) 25919.

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FORMAT	Create or revise a form or HELP screen
REORG	Reorganize the structure of a database; add or delete items

Information Input and Update

APPEND	Attach records of one database to another
EMPTY	Eliminate all data in a database
ENTER	Insert new data into a database
POST	Update entries in one database with those from another
UPDATE	Change entries in a database meeting specified conditions

Information Processing and Report Writing

COMPARE	Compare entries in two databases for (not) matching conditions and create a RESULT database
COMPUTE	Compute entries in a database
LIST	Display database records in sequential order
PRINT	Print database records in sequential order
PRINTER	Printer output control and redirection
SELECT	Select database records meeting specified conditions, creating a RESULT database
SORT	Sort database records by entries
STAX	View or print statistics of entries
TABULATE	Summarize specified entries. Print or save the result
TITLE	Print report headings

Operation Aids

HELP	Assist operator in selecting procedures
INSTALL	Saves SET and PRINTER options
RESTART	Continue processing interrupted commands
RUN	Process and execute a command procedure with options for command modification

Interfaces

READ	Transfer records from an ASCII file to an existing database
WRITE	Transfer records from a database to an ASCII sequential file

Utilities

COPY	Copy a database or file
DATE	View or enter date
DIC	View entries in the data dictionary
DIR	View the list of files in the disk directory
LOGDISK	Log a new disk in the computer
RENAME	Change the name of a database or file
SAVE	Save a RESULT database
SET	Set operating parameters
SYSTEM	Exit from Condor 1 back to operating system
TERM	Defines the computer (not needed on Amstrad)

At last – our very own staples!

Judging by your letters you're all going to be very pleased by this month's news – *Amstrad Business Computing* is going it alone. With a smart new logo to highlight our smart new name – *Amstrad Professional Computing* – and our very own staples, *APC* will be seen standing proud on newsagents' shelves throughout the land.

This move towards independence is justified by the huge interest in using the Amstrad machines for business. *APC* is just the magazine to satisfy this new and diverse market's hunger for information.

The early computers were the province of enlightened, spotty-faced youths who had a penchant for things technical. The serious computing market is dominated by people who are using computers for all manner of useful tasks, often employing software which is as complex as it is powerful. The PCWs, especially, aren't only used in place typewriters. They also run spreadsheets, databases, statistics packages – and even games.

The PCW is the model of diversity. It can be found in the strangest of places performing the weirdest of jobs – doing field work in the Arabian Desert or converting analogue signals in the North Sea. Have PCW will travel.

The diversity of uses to which Amstrad 6128s and PCWs are being put makes for an interesting life, magazine wise. The scope for *APC* in the future is nothing short of fantastic. Already it seems quite clear from the survey forms that have been returned that there is a great deal of interest in activities beyond the day to day applications. Many of you want to learn more about the different programming languages, about new ways in which your machine can be used, and about the fascinating world of computer communications. Perhaps even more surprising is the underlying interest in computer games.

Introducing you to all these topics will be *APC's* pleasure. But at the same time we recognise the one single factor which separates the Amstrad user from other business computer users – an Amstrad is a powerful machine but the users are in the main novices.

There may be a strong desire to learn more about computing but there is no escaping from the fact that we are dealing with a complex and jargon-ridden world. It's going to be very difficult presenting subjects pitched at a level to satisfy all of our readers but this has to be a case for applying the lowest common denominator.

The extra space we will enjoy as a magazine in our own right means that we can go on from just introducing subjects to running comprehensive courses over a number of issues and presenting product reviews which are designed to draw easier comparisons with reviews published in earlier issues.

One last point before I set off to slave over a hot keyboard trying to fill all the extra pages – if you haven't sent in your completed survey form from last month's issue of *ACU*, please do so. We don't just put them into a rusty filing cabinet, you know – we use them to get a better understanding of your interests.

If you want to influence the contents of *APC* then the survey is one of your opportunities for doing so.

Jeremy Spencer

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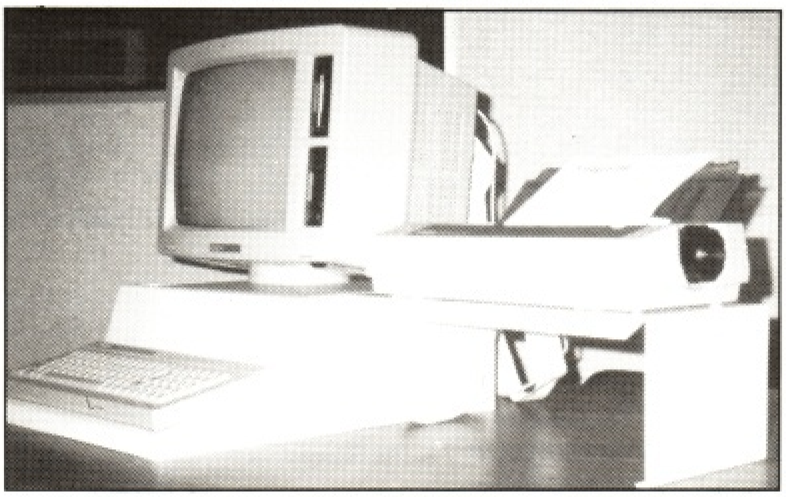
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ABC REVIEW

Mastering SuperCalc

Training aids have become a very important part of the Amstrad scene – after all, software might be getting cheaper but that doesn't make it any easier to learn. Perhaps Microcal's tutor can help you. It promises to do for SuperCalc users what GEC flight simulators do for Jumbo pilots.

There are a number of different routes to program proficiency. The most common is where the user relies on the manufacturer's manual, which more often than not will have some form of tutorial section. These can be tedious at best, and useless at their worst. Yet the supplied documentation is often all that the user has to go on, that and a little wit.

If you are a computer novice the chances are that your confidence will be pretty low to begin with and every snag or misunderstanding will cause it to ebb a little more, until you feel like throwing in the towel. This is a great pity because confidence is all important when it comes to learning about computers. More often than not one finds that once a novice has mastered one application, mastering others becomes much easier.

The personal touch

In the last issue of *ABC* we looked at a tape tutor for NewWord. Tape tutors are intended to act as your personal teacher, guiding you from the beginning, explaining everything in detail. Of course they can't tell when you make a mistake – that's up to you to work out when you notice that what you have on the screen isn't quite how the voice in the recorder described it. Tape tutors aren't totally interactive. You respond to it but it cannot respond to you.

The Microcal approach relies on a software solution. Their products simulate the program you are learning, with explanations and instructions being pasted on the screen on top of it – like a series of exhaustive help screens. The immediate advantage is that the software tutor is interactive. It will know when you make a mistake and can instruct you accordingly – unless the blunder was so mighty that you managed to kill off the program that was teaching you.

Morning assembly

Hands on SuperCalc comes with a little booklet and two discs. The booklet explains that you are expected to be at least able to switch on the computer and load the operating system, in this case CP/M.

The opening screen asks you to "enter a name by which you would like to be known." I should imagine most people would type in their first name. After a brief explanation of the tutor's workings you are given an explanation as to what SuperCalc is and why you should want to bother with it in the first place.

The very first lesson starts off by showing the difference between a large matrix calculation, done with pen and paper, and the same problem transferred to a spreadsheet. Of course the spreadsheet looks exactly like SuperCalc, and so long as you do as you are asked, it behaves like SuperCalc.

This emulation technique is the strength of the MicroCal system. You can interact with the product you are being trained to use, being gently led through all of the functions, corrected if you get it wrong and reminded if you make a mistake – and yet all the time you are working with a simulation so you become accustomed to the layout and feel of the real thing.

Before you are asked to do anything a little window appears to tell you what it is that you're going to do, and why. You might be asked to enter some text into a cell, in which case the window will tell you what has to be entered. The actual entries are performed on the command line, and the text will shoot up into place after a Return, just like the real thing. Towards the end of each session the system will come up with a little question for you to answer. Your performance doesn't affect your progress through the tutorial – you won't be sent to the bottom of the class, you'll just be asked to do it again, and again, until you get it right.

The time table

The course is claimed to last for four hours, one hour on each disc side. That may seem quite a long time but then there's a lot to get through. The tutorial is divided up into 13 topics, the first being concerned wholly with the workings of the tutorial. Topics 1 and 2 introduce the trainer and SuperCalc, its basic concepts and applications.

Topic 3 is about getting started, including status, help, scrolling and GOTO. Topic 4 describes building a worksheet, entering information and editing.

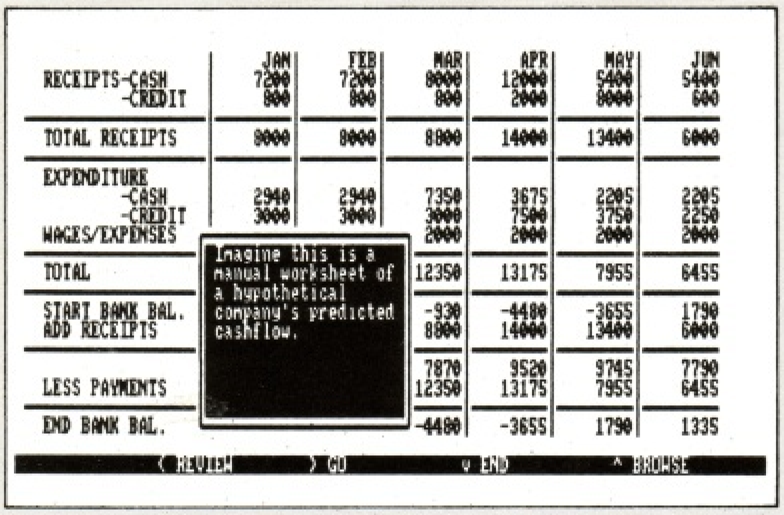


Figure 1: This isn't a spreadsheet, but the program's example of how a problem might be looked at manually

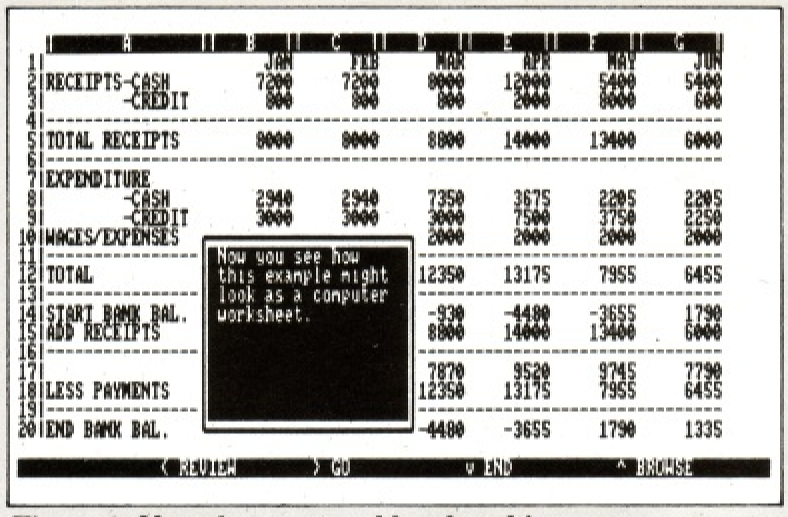


Figure 2: Now the same problem but this time how it would appear in SuperCalc

Topic 5 looks at the Format command, including loading, defaults and directory. Topic 6 covers Copy and Replicate, while topic 7 is about Blank and Edit, with the Escape key functions.

Topic 8 explains using simple formulae and topic 9 the global command, including altering the display and the way in which calculations are performed. Topic 10 shows how to insert, delete, move and protect.

Topic 11 describes Titlelock and window – splitting the worksheet into windows. Topic 12 is about arithmetic functions, including arithmetic and preference operators and keyword functions. Finally, Topic 13 describes phasing and printing.

As you can see there are a lot of topics. Of course if you are used to using SuperCalc and only need help with some of the more complicated functions then you might prefer not to work your way through from Topic 1.

In fact it's quite simple to jump straight into the area you want to study – just load the correct side of the disc and, by using the browse function, select the topic from the group. You will find that as you progress further through the course the system will prompt you less and less. All through the first disc it will remind you that you need to precede a command with a / symbol. Later on you will just be asked to perform the task, unless you get it wrong in which case the program will remind you of the proper procedure.

Suitability

How you get on with this course will depend on your patience and knowledge of SuperCalc. Certainly there is a case for claiming that the less you know about the program the better. An informed user will always be tempted to stray off and have a wander round. You can do that with an audio tutor because it has no control over what you are doing, so it is easy to get a bit smart and have a play – before you know, you are out of sync with the tape.

This simulation tutor will force a pace on you, but the fact that you are living with a simulation is rammed home when one starts being a little creative. I was told to move the cursor to B2, instead I thought I would send it to B3 (well, it's the same thing, almost). I know I should do as I'm told but entering data becomes very artificial when your entries are rejected time and again because there's a space difference between what you typed in and the phrase on the window.

Only two other small points caught my notice. Firstly Joyce owners aren't going to see SuperCalc as it should appear on their own screen because the tutor only works in 24×80 mode. Secondly the error reporting might have been a little more useful. When a mistake is made a prompt is generated on the little window. Should the same mistake be made, and it's all too easy, the prompt remains exactly the same. Life just seems to leave the tutor after a second mistake.

Conclusion

So is it all worthwhile? My immediate reaction has to be yes. This is an easy way to learn – like tape tutors it isn't perfect, but it isn't far off. After only a short time I had learnt quite a lot and I am going to use the thing to help me master SuperCalc just as soon as I am allowed to go home. – **JS**

Hands on SuperCalc
MicroCal,
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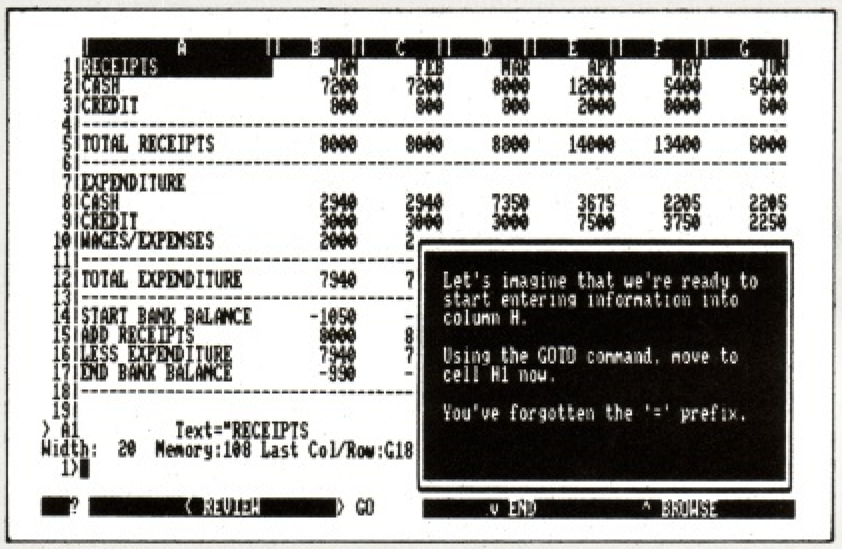


Figure 3: Just a gentle reminder because I forgot how to use GOTO

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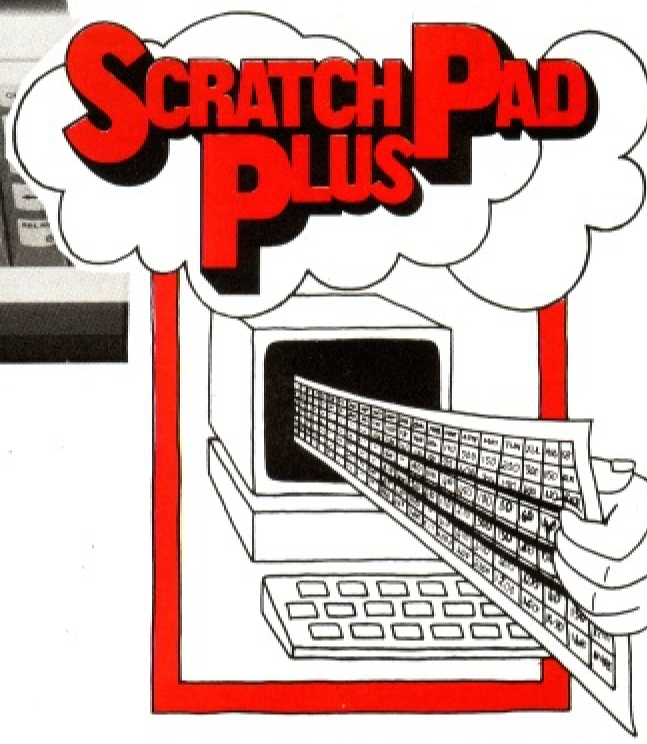
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ABC REVIEW

Putting MAP on the Joyce

Barry Pickles and John Burke investigate an exciting new accounts package which has done sterling service on some very expensive machines.

The MAP suite is a fairly well known package which has recently been transferred to the Amstrad machines. To say that it is big is an understatement. The total suite takes up two full discs for the programs alone. It runs under CP/M Plus and, although it could conceivably be run on a single drive system, it would require an awful lot of disc changing on the part of the user. We suggest that a twin drive system is needed here (or a RAM drive – here is a case where an expanded drive M: would be a definite asset).

The complete suite comprises sales, purchase and nominal ledgers, a stock control module and a set of utilities. It comes with a manual of more than 150 pages, bound in a vinyl cover which folds back to provide an integral stand so that you can read the manual at ease, while sitting at the keyboard – just one example of the thought that has gone into this package. The manual itself is very comprehensive, with lots of screen shots and sample printouts, and it includes some model data collection forms which you can photocopy at will.

The documentation goes to some lengths to explain what is happening and why it does things in a certain way but, should you feel the need, there is hot-line telephone support or a full training course available – at extra cost. All entries are done by means of unambiguous screen prompts and you may amend any data at the end of each screenful, by specifying which line you wish to edit.

Integration – the moduler approach

Each module can be operated as a stand-alone program, but it is the ability to integrate the data which makes accounting packages so much of a boon. In case you were wondering, "integration" means that the data provided when using one module will, automatically, be transferred to any other relevant module.

For example, posting a sale to a particular customer's account in the sales ledger will also post the same item in the nominal ledger to a sales account, a debtors control account and the VAT account, without you having to repeat the information. full double-entry bookkeeping is enforced throughout the package and the program will not allow you to proceed if it detects an error. Figure 1 shows how the modules are related.

All modules offer password protection at various stages of the procedures. At the setup stage you are asked to estimate the number of customers or suppliers and the average number of transactions per accounting period so that the system can reserve disc space. However you are allowed to exceed the number of accounts, providing there is enough disc space. You are not allowed to exceed the average number of transactions but, since it is an average, you can trade off numbers between accounts. This is an eminently more sensible approach than some packages, which just give up if you try to go beyond the specified estimates.

The nominal ledger

The nominal ledger summarises all the financial transactions of a company. These are grouped together under a type heading (account) and up to 250 of these are allowed by the system. In addition, should you wish, up to 99 departmental cost-centres may be allocated to each account.

During the "period end" process, each group of accounts is totalled and produced in a format that shows the profit or loss for that month, either by company or by cost-centre. The system produces four main types of report – a trading account, profit and loss account, balance sheet and a contribution account.

The latter may not be familiar to many of you – what it does is to summarise, by individual sales/purchase type, the contribution that each has made to the overall profit or loss. Each account may also be allocated a budget figure and accruals, prepayments and journal entries are also catered for.

Optional reports available at the year end are – account code listing, transaction listing, trial balance, listing of accruals/prepayments and actual versus budget performance. All these may be produced for any cost-centre. The nominal ledger requires around 100k for

data storage – more if you use the cost-centre option.

The sales ledger

The sales ledger can cope with around 200 customer accounts on a single-sided Amstrad disc. It provides automatic posting to the nominal ledger and can link into the stock control module. When setting up the customer accounts you are allowed, as well as the usual details, fields for contact name, customer type (up to 99), credit limit and discount allowed. The module provides an invoicing option which links into the VAT account, and you may format invoices in any manner you wish – there is a dummy run option to check that the formatting is to your liking. Up to six VAT rates are allowed and these will be calculated automatically by the invoice option, if you desire. Another option allows you to process invoices individually or in batches, with a control total. Finally, customer statements are run off and you may request an aged debtors report.

The purchase ledger

The purchase ledger comes on the same disc as the sales ledger, as it seems to share some of its sub-programs. Again, you are allowed 200 suppliers on a single-sided disc and posting to the nominal is automatic. As well as remittance advices, the module can also produce cheques – this is unusual on a package selling at this level – and, again, you may obtain an aged creditors report. Note that this ledger does not integrate with the stock control module. All data from this ledger needs to be posted by hand to the stock ledger.

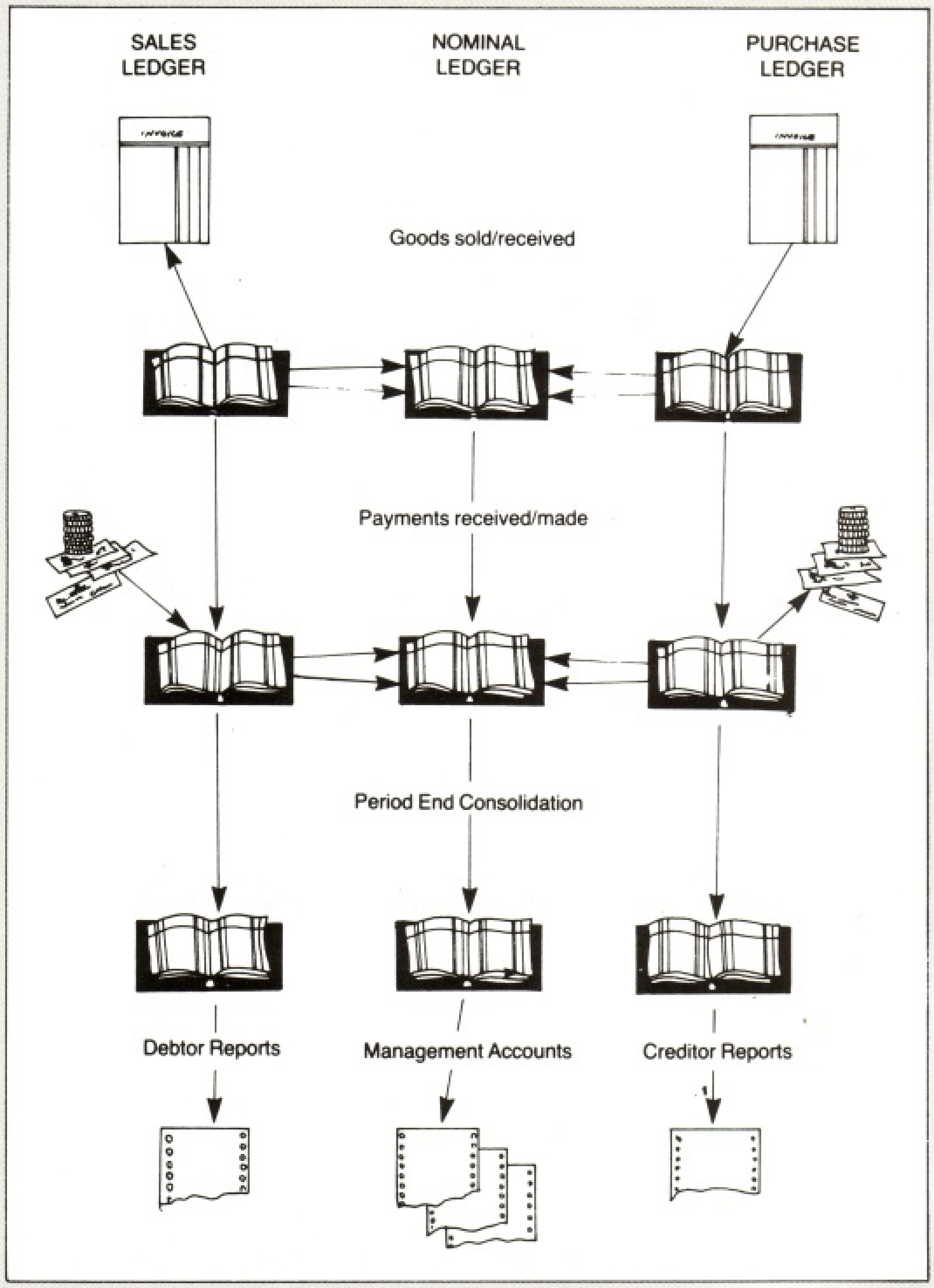


Figure 1: Sales, Purchase and Nominal Ledgers – Overview

And lastly stock control

The final module, stock control, is quite sophisticated – even more so, perhaps, than the other parts of the suite. It can cope with quite a large inventory, needing only around 30k for 100 lines. You may specify three levels of sales price, five levels of cost price, 20 stock movement types, 99 sub-headings for sale units, as well as minimum stock levels and fixed re-order quantities.

As you might imagine, this leads to very comprehensive reports, including stock cards, valuation, current stocks, price list per item, stocks having nil movement in the period, stock below minimum quantity, new stock allocated and on order, cost of sales, and inventory list for manual stock take. As noted, this module will integrate with the sales ledger, but not the purchase ledger.

The remainder of the suite is taken up with a group of utilities which allow you to set up the system to your own configuration and to alter account headings and the like. Having used this system for some time now, we are most impressed. The manual is quite detailed, but the average bookkeeper will have no difficulty at all in operating the system.

It is apparent that whoever programmed these packages knew what they were about. The screens are clear in their intent and input tightly defined. Yes, you can crash the system if you are really determined, but error trapping is good and you have to do something really stupid to defeat it.

As you can see, this is a very comprehensive package, but don't be put off by the depth of its sophistication. You don't have to use all the facilities, but if you are at the level where you are requiring detailed analysis, it is highly likely that you are using a trained bookkkeeper/accountant. If so, you may rest assured that they will find themselves very much at home with the way the suite operates and they will be delighted by the reports that it can produce.

Nor should the small trader be afraid of using this suite. The more comprehensive the information put into it, the more detailed will be the reports – but you can start at a very easy level and build up to the more sophisticated features as your business expands. One thing's for certain, by the time you outgrow this suite, you will be in dire need of a larger computer setup!

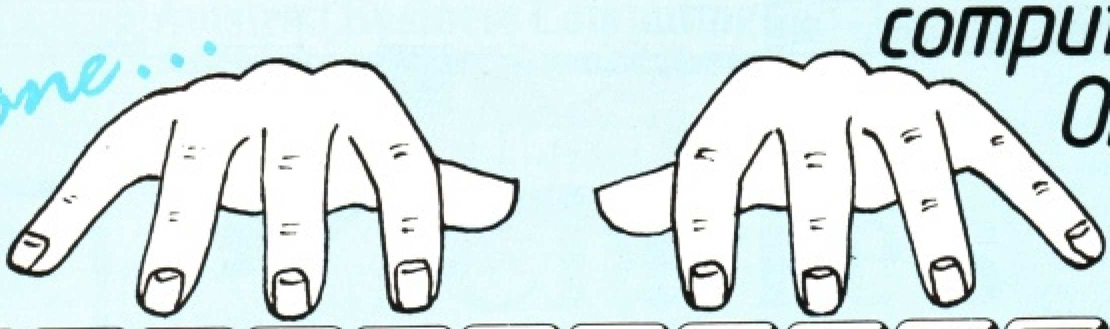
The price might be a shade on the high side for the average Amstrad owner, but it will prove to be a very worthwhile investment. This is no toy package. It can hold its own among the Peachtrees and the Pegasus. Highly recommended.

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CP/M

Clarke's Corner

ACU aren't the only people with a Hairy hacker – we have one too, though ours is a lot hairier and considerably more hacked about. He answers to the name of Andrew Clarke and can witter on for hours about public domain software.

It is probable that the most widely used communication program in the country is Modem7. It is in the public domain, meaning that the author has allowed it to be copied and used by anyone, but has specifically forbidden it to be sold for profit.

There are many other communications programs, but Modem7 is, I think, the essential one. It lacks a few facilities, such as an auto-dial directory, but essentially it gives you all you need to communicate with other computers through the telephone line or through a serial link. The fact that it is free is just a bonus.

Once you have got over the novelty of using a modem and have tired of Prestel and Telecom Gold, you will want to send files to other people via the telephone line, download programs, or explore the immense undergrowth of bulletin boards. Let no one hoodwink you into believing that you need a fancy modem or an expensive communications program. All you need is Modem7 and a nice cheap modem that will run at 300 baud. Telecommunications does not need to be an expensive activity.

Getting hold of Modem7 or UKM7, the UK rewrite, should present no problem, particularly if you belong to the CP/M User Group. It should be configured to run on your hardware, but versions that run on the Amstrad micros are available ready to run.

If, like me, you have several micros, all with different disc formats, then it is a great boon to have a version of UKM7 configured for each, so that one can transfer files between them merely by connecting them together with the appropriate serial cable. Incidentally this is one of the easiest ways of transferring files between Amstrads as well.

UKM7, which is the state of the art, is the end result of years of development. Originally a program called Modem was written by Ward Christensen for the Chicago Area Computer Hobbyist Exchange. This was an early user group that eventually begat the CP/M User Group in the States.

Ward Christensen devised a reasonable way of sending files so that the integrity of the contents was virtually guaranteed. This was necessary because the telephone line was never designed for transmitting data and its use for such purposes is fraught with compromise.

If you get noise, glitches, crossed lines or static, the result is fairly obvious. Instead of the recipient getting such stuff as "Dear Sir, I write to complain about the recently purchased . . ." and so on, he would be puzzled to get such things as "Dear Sir, I uU@@@@!&A&R&Gomplain about the recently NrG94ynjI . . .". This makes for difficulties, and could lead to misunderstandings. If you are sending a program rather than text, the result could be more serious.

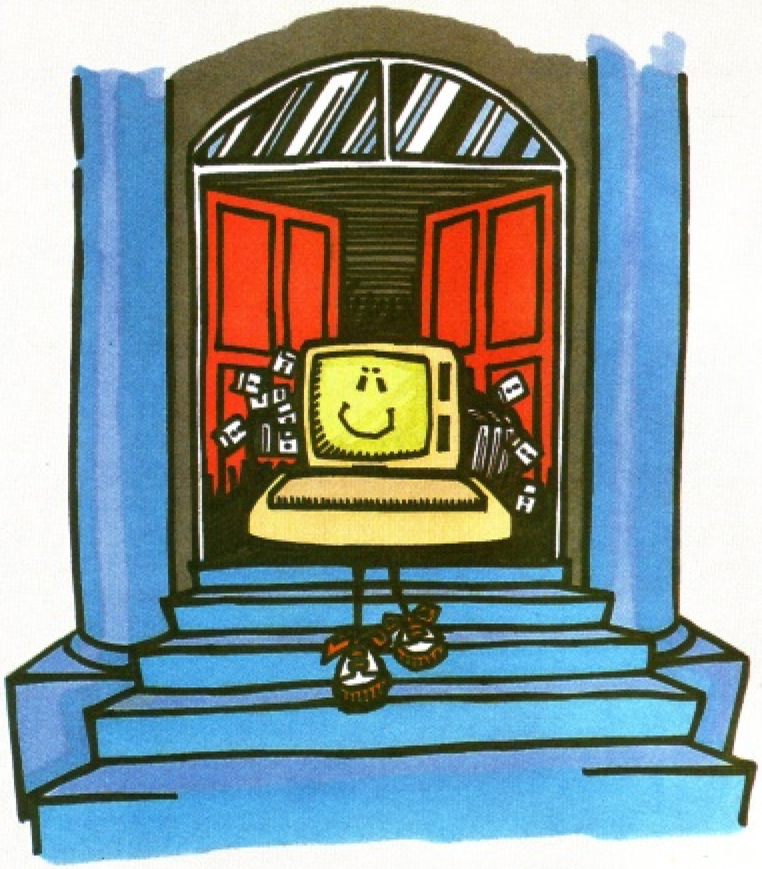
Modem7 works by chopping a file into easily digestible chunks or packets. The sending program keeps repeating the transmission of each packet until it has a positive acknowledgement from the receiving program that it got there all right. On a good day you may notice that the occasional packet is repeated but on a bad day transmission can be very slow because of the need for extensive retries.

Distance does not seem to be significant – I have exchanged files via modem with people in California and Saudi Arabia without any data corruption at all. Sometimes I get terrible trouble on a local line to the next village. Anyway, with Modem7 you need not worry because the program looks after everything.

You may think that a communication protocol would be easy to design. This is not the case, however, because of the number of things that can go wrong, and the different uses to which a utility like Modem7 can be put. It is important that the program should be able to retrieve itself from all sorts of unpleasant situations.

Imagine you are sending a sizeable file over a long distance. All has gone well until the last sector, at which point you get a crossed line. The other party, as is often the case, misinterprets the whistling of the modems as static and fails to get off the line for a while. Unless your program is well constructed, it will fail and ditch the whole file – an expensive action.

It is important to retrieve as much as possible when errors occur. Modem evolved over the years to deal properly with more and more of the things that can happen. The original then evolved



into Xmodem which, in turn, developed into Modem7.

The protocol used by the program has become the industry standard because it works well and is well documented. Every commercial comms program worth its license fee is able to emulate it. All the leading programs such as Lotus 123, PC Talk, and Crosstalk and all bulletin boards that support CP/M do so. The protocol is often referred to as Xmodem, which more exactly should refer to an old version of the program that has a rather less robust error checking system and could only transfer one file at a time.

Like any program that knocks around for a bit, and is improved by a number of people, it started to look rather tatty. At this point, David Back of the UK CP/M User Group took the program in hand, pulled out yards of superfluous code and generally tidied the whole plot up considerably. It is this version of Modem7 which is generally used here in the UK.

I sometimes get people phoning me to complain that it does not work properly. This is absurd. It works very well indeed. It is usually the case that the complainant has got a wrongly configured version, has forgotten to plug it into his modem, or has managed to clobber the file. When it is properly set up, it is an efficient and reliable program that does the job for which it was intended. Who could ask for more?

Modem7 in use

Here is how to send a file, using UKM7. Unwrap your shiny new modem – a nice cheap one will do. One lead is plugged into your serial port, and the other lead plugs into the dual outlet adapter that you have in your line jack unit. Plug your phone into the other socket of the adapter. Switch on your computer. Set the baud rate to 300, using the Device program. You may need to read The Amstrad CP/M Plus for details on how to do this.

Put your comms disc, containing UKM7, in the drive. Type UKM7 followed by T in response to the initial menu, to put you into terminal mode. Dial up your favourite bulletin board (The UK CP/M User Group uses Alan Walker's BB on 0767 50511).

You will hear the ringing tone, hopefully followed by the call being answered. You will then hear a high pitched whistle called the carrier. Set your modem to originate mode, and switch it on. You should then hear your modem whistle in return, in a slightly different tone. At this point, you can put down the handset and pop over to the computer.

Yes – if you have done everything right, the welcoming screen from the bulletin board is scrolling up your own screen. If this is not so, then you have blown it. Lift the receiver. Can you hear both the warbling whistles? If you cannot hear yours, the modem is not working for one of several reasons. If your modem is whistling properly but does not warble when you press a key – make sure you are in UKM7 terminal mode – then something is amiss in the connection between micro and modem.

If you cannot hear any carrier from the other end of the line, then you may have got a wrong number and a perplexed subscriber is hearing a curious whistling sound with occasional uncouth profanities from a fumbling micro amateur. If both whistling sounds are at the same frequency, you have probably set the modem to answer instead of originate. Have you set the baud rate properly?

If all is well, then read the instructions that appear on Alan's BB. Try a few things – download all his bulletin board numbers, leave me a message in my message box, and ogle the free software. Do not wait around too long as other people may be waiting to access the BB. When you feel confident, then download CP/M programs into your micro, using UKM7. You need to switch into Xmodem mode from terminal mode, which is all explained in the board.

Using a modem with UKM7 is a matter of gaining confidence. There is no real skill involved but it is just that there are one or two things to remember.

Now you are communicating, what use is it? If you are using it in a small business context, then the telex service run by MicroLink on Telecom Gold is invaluable. One does not use the full capabilities of UKM7, just terminal mode. You will need to subscribe, but the cost of sending telexes (less than £1 a time) makes such a thing practical for a small business. Telexes are received in a message box and you have to dial in to read them. Other messaging facilities are useful, but inessential.

Unless you have an auto-answer modem and a computer with fancy software switched on all day, the receiving of text or other material via the modem is tricky. This is where the bulletin boards or commercial messaging facilities, are so useful. You can use one or more to collect all your messages and when you next switch on you can get your mail and your act together.

You can send to a bulletin board without worrying whether the final destination is awake and functioning. I can send text or programs all round the world – expensive but immediate. If only more people had modems, then it would be easier to use them in the commercial context for ordering goods or sending correspondence.

Even so I have never regretted the expense of a modem – micro telecommunications has a tendency to become indispensible if one starts using it.

Just watch those phone bills though – British Telecom charges a great deal more than Ma Bell in the States, where bulletin boards were invented. Until we get a sensible off peak rate we will need to linger as little as possible in the fascinating special interest bulletin boards.

Do as much preparation as you can off line, save the board's help file and print it out so you can refer to it next time. As one gushing manual to a stateside comms package once burbled: "Welcome to the world of telecommunications". Well said.

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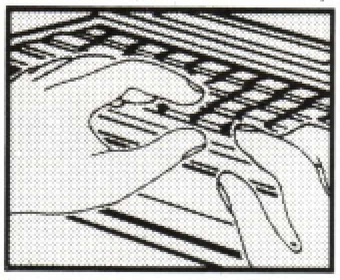
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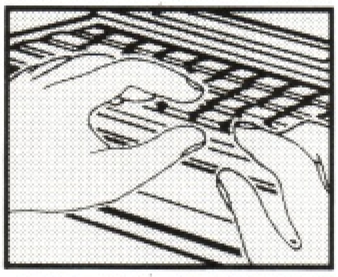
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ABC REVIEW

Slow but powerful spreadsheet giant

Microsoft Multiplan has, for a long time, been recognised as an industry standard on minicomputers and has now been given a new lease of life following its release for operation under CP/M 3.0 on the Amstrad range of machines.

The Multiplan package contains a single disc, a manual, a quick reference guide and a set of photocopied sheets that detail the installation on Amstrad machines. The notes contain an excellent guide to making a working copy, which seems to be the stage that confuses most people, and describes the function key assignments. The quick reference guide, not surprisingly, contains a summary of all commands and operations available and proves invaluable once you've attempted to wade through the whole manual.

The manual is clear, concise and easy to follow. There are two separate sections. The first is a tutorial which introduces you gently to Multiplan, and provides some basic examples of setting up a spreadsheet. The second section is a reference guide that describes the syntax and operation of the commands in detail, as well as describing the menu structure.

So what is it like to actually use? The program is executed by means of SUBMIT files on both the CPC6128 and the PCW8256/8512, with an option on the latter to copy the program to the memory drive. The opening screen format is a standard matrix, very reminiscent of SuperCalc. The first difference that you notice, however, is the menu options presented at the bottom of the screen. Instead of the rather harsh reminder of the alphabet given with the Cracker, or the general lack of anything with SuperCalc (until you press the appropriate key), there is a rather reassuring list of words that look as though you might have a chance of understanding what they are there for.

The number in the top left hand corner of the screen is an indication of the window that is currently in use – more of this later.

Menu selection can be achieved either by moving the highlight block to the relevant option and then pressing Return, or by pressing the initial letter of the option.

On-screen help is available at all times either by selecting the Help option from the menu, or by pressing the ? key. The help screen displayed is relevant to the current operation. For example, when in the middle of copying a block the ? key will display information about copying – logical, eh?

Data can be entered in two formats – as text or a value. Text entries have a numeric value of zero and can be up to 255 characters long, depending on the width of the column in which they appear. The value format is used for entering both constants and formulae. Multiple data entry is possible by using the cursor keys to finish entry into one cell and move to the next.

One of the most useful facilities available from Multiplan is naming of groups of cells. Suppose, for example, that you were constructing a simple home budget calculation, and you had split it into two sections – outgoings and incomings. The totals of each section could be labelled as Outgoings and Incomings. The overall cash flow line could then be labelled as Total. The clever bit is that you can now reference these labels from within a formula. Here we could type:

TOTAL = INCOMINGS – OUTGOINGS

which is obviously a lot more readable than A15=A10–A5.

You can jump to a particular group of cells by using the GOTO NAME command, which moves the cursor to the top left hand corner of the cells referenced.

A major disadvantage, which is a feature of the implementation on the Amstrads, is that the screen update is slow – almost painfully so. This is particularly noticeable when scrolling the screen, which obviously happens a lot once your spreadsheet becomes larger than the screen area. Multiplan does come installed for the full screen on the PCW versions, which goes some way to alleviating the problems but by no means overcomes them.

The screen display can be split using the windowing facility, which permits up to eight windows on screen at any one time. Each window has a # character marking the top left hand corner, making it simple to determine at a glance the location of each window. The individual windows can be linked together so that scrolling one will scroll the linked window as well. This technique allows you to look at different areas of income, for example, in the same month, with the month column scrolling automatically. Title columns and rows can be locked, so that scrolling the sheet does not remove the text entries from the screen.

There is a very versatile print output

facility that permits full use of the printer via entry of control codes. Print output can also be directed to a data file on disc, for later viewing or for examining with a word processor.

Probably the single most versatile feature is the facility to link spreadsheets. Suppose, for example, that you were preparing a forecast for the next fiscal year. It is likely that the forecast would take the form of a detailed analysis month by month, accompanied by an overall analysis giving a summary of the year's performance.

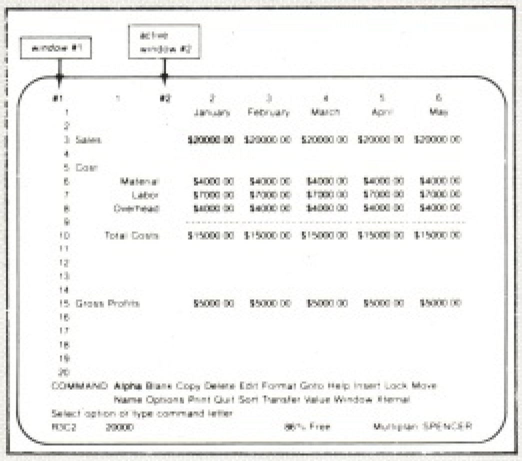
Multiplan will allow you to generate each monthly assessment as an individual sheet, and then to automatically transfer the totals from the individual sheets to a separate annual summary sheet. The linking is simply achieved by naming the cells that you wish to read data from in the monthly sheets – these are termed "supporting sheets" in Multiplanese – and then using the external copy command in the annual sheet (the "dependent sheet") to read these values in.

Checks are made in the dependent sheet to ensure that the external link is being made to a blank cell, to ensure that data is not being overwritten. Whenever the dependent sheet is loaded a "copying" message is displayed to inform the user that the supporting sheets are being accessed to read in the data.

Each supporting sheet is referenced by both a name and a drive indicator, so that the sheets do not have to be all located on the same disc.

The related spreadsheet facility really comes into its own when you are performing "What if" projections. In our example we could change the figures for January (say by increasing the advertising budget) and then go back to our annual projection to see the effect on profits without having to transfer any data between the two sheets.

There is no restriction on the number of links that can be made in this way, and so a very complex network of sheets may be set up. Care must be taken in this case to ensure the integrity of the data



Example of multiple windows

produced. Suppose that we introduced a third level of analysis to our projection – a quarterly analysis. The annual sheet could then derive its values from each of the four quarters.

If we now make a change in the January figures, this will be picked up if we load our quarterly sheet. If, however, we load the annual sheet first there will be no apparent change – this is because the quarterly sheet will not update its totals until it is loaded. This can be overcome by loading the sheet with the lowest priority first, followed by the next priority and so on until the overall analysis is reached.

The moral of this is that the links between sheets should be carefully planned to avoid the potential chaos and confusion. Microsoft has very generously included a feature to unravel the mess that is bound to ensue – the external list command – which produces a list of the name of spreadsheets and their dependencies.

Referencing

The referencing of groups of cells can be achieved by various techniques. Firstly there is a straightforward absolute referencing, where the coordinate location of the required cell is given in full (such as R1C2). Secondly there is a relative reference where a cell location is defined by its offset from the current cell. For example R(–2)C points to the cell in the current column that is two rows before the current cell. These two forms of referencing individual cells can then be defined to specify groups of cells.

The simplest technique is to specify a rectangular block of cells by giving the top left and bottom right coordinates, so that R(–4)C(–2):R(–2)C defines a block of four cells. Alternatively you can reference the intersection of two blocks by separating their specifications by a space – R1C3:R5C5 R3C1:R6C8 actually defines the block R3C3:R5C5.

Finally the definitions may be combined in a list separated by commas. This is particularly useful when assigning one variable name to a set of cells that may not necessarily be physically located together on the sheet.

The mathematical facilities provided are fairly standard – arithmetic calculations as well as logarithmic and trigonometric functions. In addition there is a STDEV (standard deviation) and a NPV (net present value) function for basic statistical calculations. The DOLLAR function converts a figure into a financial format (two decimal places with negative values enclosed in parentheses).

Data can be protected by LOCKing the cells in which it is contained. LOCKed cells cannot be written to until they have been UNLOCKed (believe it or not). There is an option to lock either an entire range of cells or only those that contain formulae, which still allows data to be changed for "What if" calculations.

The COLUMN function returns the number of the column that the formula is placed in. For example, COLUMN would return the value 5 if placed in R1C5. This is very useful for formulae that are defined once and then copied to different areas of the sheet.

Two commands are provided for tabular work – INDEX and LOOKUP. INDEX returns the value contained at a particular location in a table. For example, INDEX(R1C1:R8C8,3,3) would return the value held in R3C3. LOOKUP returns the nearest value that is less than or equal to the number specified, from within a row or column. Suppose that column 5 had the following contents:

C5
100.00
125.00
234.00
250.00
500.00
630.00

then LOOKUP (C5, 130) would return 125.00 and LOOKUP (C5, 629.25) would return 500.00 – handy for calculating tax returns from a set of tables.

Conclusion

Multiplan is, undoubtedly, one of the most powerful spreadsheet programs currently available for the Amstrad. It is well documented and easy to use, with more than adequate help facilities. The option to relate spreadsheets is a definite boon, particularly when you consider that there is less than 30k available for each individual spreadsheet, which makes serious projections almost impossible with the likes of SuperCalc.

However, the screen update is slow to a painful degree which makes movement around large sheets tedious. There are no date calculations, which are useful when doing projections and the statistical facilities are limited.

Exchanging data with other programs is not as easy as it might be. The output format is unique to Microsoft, and so unless you are using another Multi-product it ain't gonna be easy. There is an option to print to a disc file, however, so with a bit of jiggery-pokery it is possible as long as you've got the patience.

In the final analysis, it is a trade off between the power of the related spreadsheets and the speed of use – there are an awful lot of happy Multiplan users out there, albeit on IBMs.

ABC

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REVIEW

Tasword 8000, a speedy flexible friend

Tasword 8000 £24.95
Extra Fonts £14.95
Spellchecker £16.95 (available soon)
Tasman Software, Springfield House, Hyde Terrace, Leeds LS2 9LN

The first version of Tasword 464 soon turned into 464 D when the Amstrad drives came on tap. When the 6128 machine appeared Tasman Software were right on its heels with the beefed up Tasword 6128. Now we have a Tasword for Joyce machines – Tasword 8000.

What you get in this package is the word processor, a mail merge program and a version of Tasprint which can produce all manner of fancy fonts – two of the eight available fonts are supplied with the package, the other six are supplied separately.

Getting in and on

The program is loaded under CP/M by typing TASWORD. You cannot load the files into the M: drive because that's where the program stores your text. Before the RAM drive is configured to hold the text the program first checks for typefaces on the program disc. Any that are there are loaded into memory. There is a long pause while the RAM disc is set up and then you're off.

One of the advantages of the original Tasword was its relative ease of use. The commands, be they cursor control or toggles for insert, justification and so on, were all quite logical. What's more you only had to glance up at the help window at the top of the screen to discover the command you needed and whether it was invoked using the Shift or Ctrl key. Tasword 8000 is altogether more powerful with many more features even than the 6128 version. The result is that the help menu is quite crowded and the Extra key is needed as well as the Alt and Shift. At first I thought things were getting a little out of hand but control of this beast is only a matter of familiarisation.

Editing

The edit page will be the first to greet you when you load Tasword. The chances are the first file you will load will be the tutorial which is a very helpful chunk of text, well worth reading. As you work your way through it you are introduced to the different facilities of the program which are explained and demonstrated.

The tutorial file is 18k long and the loading time 19 seconds. Moving the cursor around the screen is quite fast – moving it from column 1 to column 80 took just over 3.5 seconds. Scrolling down 100 lines takes nearly 11 seconds. That time is for moving the cursor, although the screen can be scrolled up 100 lines in nine seconds using the fast scroll command.

Tasword 8000 stores text in the memory drive so depending on the size of your RAM disc you will have a maximum capacity of 100,000 characters (16,000 words) or 300,000 (48,000 words). Those who envisage using large text files might be interested in some timings. Rather than sit down and write a 100,000 character file I merged tutor into tutor until it was a file of 20,893 words or 114,000 characters in length. Getting around a document of this size would be quite problematical with Locoscript but Tasword laps it up.

Two commands are very useful, GOTO LINE and GOTO PAGE. Moving from page 1 to page 20 took 3.9 seconds. Using the line command was just as fast – line 1 to line 2100 took 3.5 seconds. Moving from the top to the bottom of the text file took the same 3.5 seconds.

Now for the all important save. Of course it goes without saying that a file this size can only be saved once on a 170k disc. There won't be room to have a back up so the old file would have to be deleted before the new one could be saved. On a clean disc the operation took 2 minutes and 54 seconds. Loading it back in took one minute less.

The range of editing commands are vast – have a look at the screen picture which shows the entire Help page, which gives you an idea of the facilities available. One notable feature is the Unerase command, which can only cope

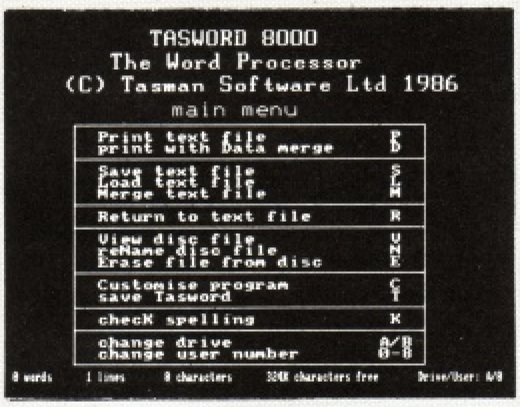
with a line of text at a time but none the less it's nice to have it at hand.

A point to note is that Tasword 8000 allows you full control over the disc drives and the user areas on them. Moving from one user area to another is as simple as one could hope and for those with twin disc Joyces this can be a pretty useful facility.

Two features worth special mention are the note pads and custom text keys. From the editing screen the user can load into any one of the 20 keys up to 250 characters, so a total of 2,000 characters can be shared out among the keys. These can be used for storing your name and address and other chunks of text which you frequently use in documents.

The note pads are scribble areas, ideal for jotting down phrases or ideas which you may want to use later in a document but might forget in the meantime.

A special line mode has been added to aid the construction of tables and charts. Once you have switched into the mode you just use the cursor keys to draw the lines – a neat and useful utility.



Tasword's main menu page

The main menu

Pressing exit from the editing page takes you to the main menu and from here you can get at the rest of Tasword's features. We'll take a quick look at each in turn.

Printing. This command will print out the current file. As with the earlier versions you are given a whole range of options which can be set up to meet a wide variety of requirements. Not only can you specify the part of a document to be printed in terms of page numbers (page 1-6), but the range can be set in terms of lines. So you could ask for only lines 34-76 of a document to be printed.

Other options let you set the number of copies, line spacing, printing headers or footers as well as page numbers. Further options let you specify the positions of these items on the page. Most of the options have default settings so you can either alter them as you please or just whiz past, hitting Return for each option. Alternatively pushing Copy will set the defaults and get straight on with the printing.

Printing is one of Tasword's strengths. It works very well with the Amstrad printer but should be able to fly just about any other make. The codes used to set up the variety of different typestyles – enlarged, underline, condensed and so on – can be changed from the Customise Print menu, as can the printer initialisation code.

This technique may not be as simple as installing the program for a printer as with NewWord or SuperWriter, but it is just as effective and can often be more flexible.

Setting up a page with a variety of print styles is simplicity itself, and the overall page layout can be customised and saved.

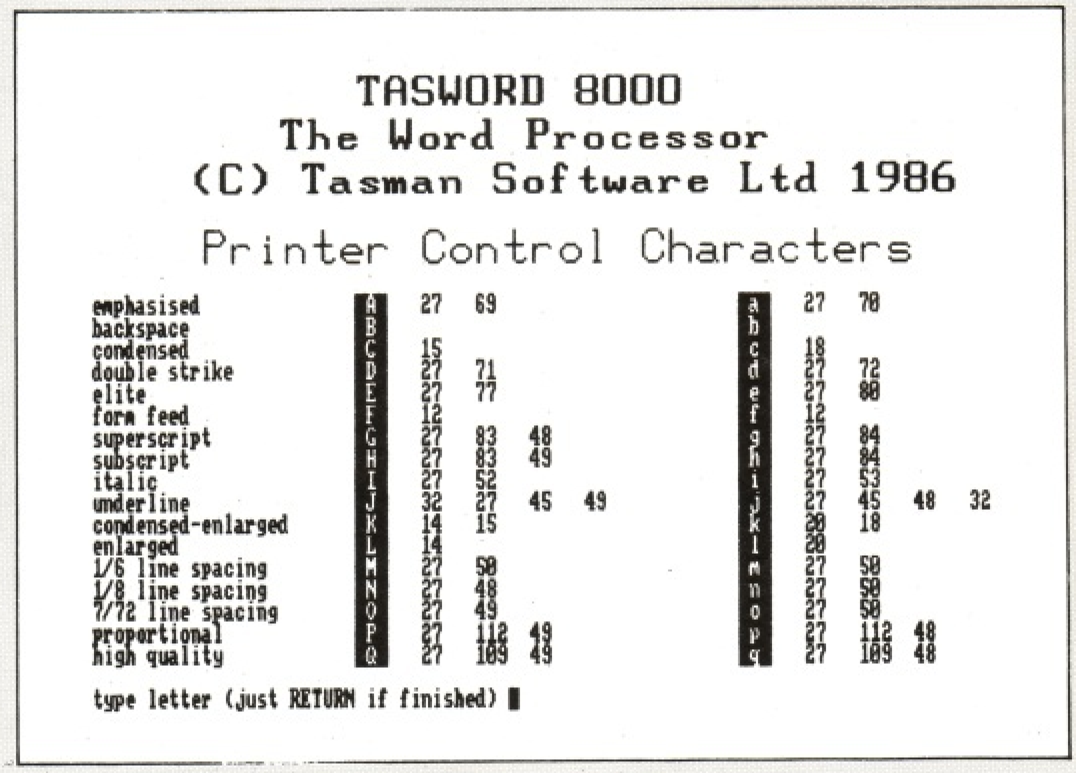
Data merge. The mail merge capabilities of Tasword 8000 are a lot better than you might expect. Not only can the program maintain its own data files but it will accept data files from other databases.

Conditional merging is permitted allowing you to print letters or invoices selectively from a large data file. A merge file can also accept input from the keyboard during the printing process as well as sequentially numbering the output documents using a NUMBER command. Label printing is made easier by Tasword's ability to send printer codes to the printing device.

Housekeeping. Tasword 8000's disc facilities have been enhanced by the commands which allow the user to view the contents of a file even while another is being edited – the effect is rather like using the type command from the main menu. Disc file can also be renamed or deleted. Changing drive or user area can



The five main help screens all in one go



This is where you learn to talk printer language

be done from the main menu, or after the load or save commands have been selected.

Customising Tasword. There are so many features in Tasword which can be changed to suit your personal requirements or taste, I suspect many users will make changes to their working copies on a weekly basis.

From Page Layout you can set the number of lines to a page, the size of headers and footers, the codes obeyed as carriage return, line feed and form feed useful for cranky printers and making text files compatible with other word processors.

With Normal Print Characters Tasword 8000 allows you to assign up to 12 codes to any one normal character. When that character is sent to the printer it is the sequence selected by you which will actually be sent. This facility can be used to print all manner of weird characters.

For example, if you wanted to print a plus and minus sign you would asign the code for minus to a character followed by a backspace code and then the code for a plus. Advice for using this facility to get graphics out of the PCW is given in the manual.

Extra Character Set Print Characters is similar to the previous option but this time the codes are assigned to the second character set, the one with all the funny symbols that people seem to want these days.

The printer control codes option was mentioned earlier. If your printer can do it, this facility will make it.

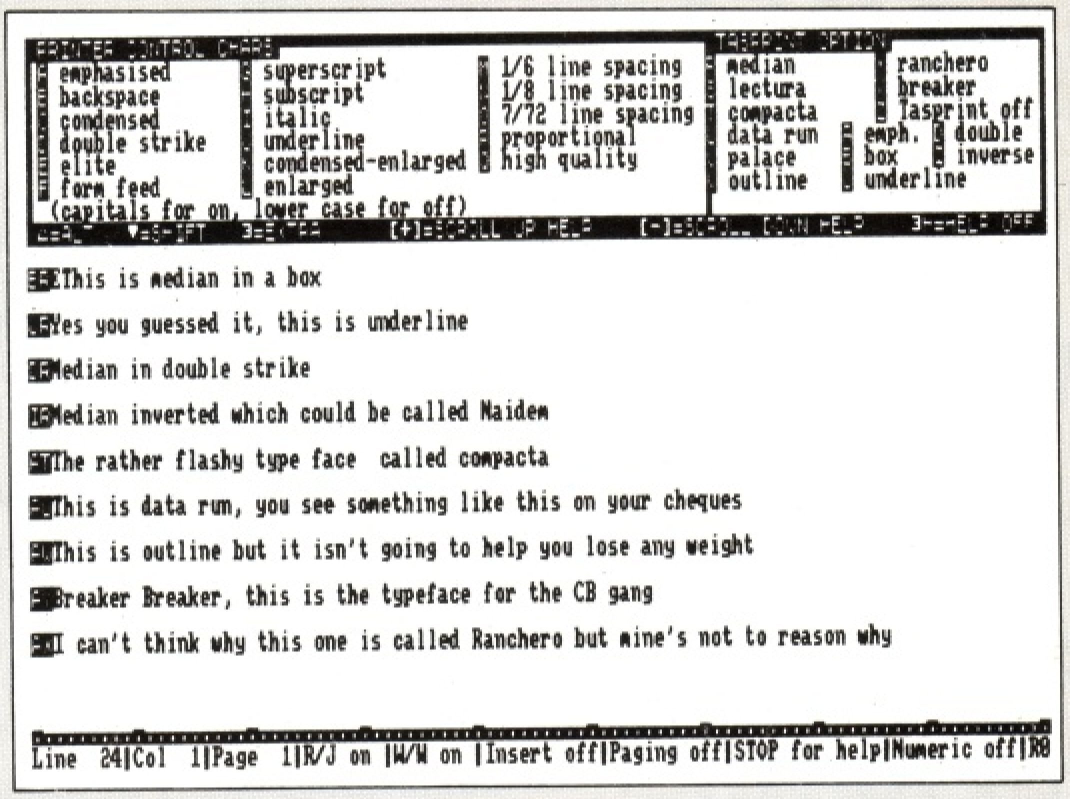
The change program section allows the user to define the shape and type of the cursor, select the language for the different keyboard layouts found on international PCW machines and a few other wonderful things besides.

Overall

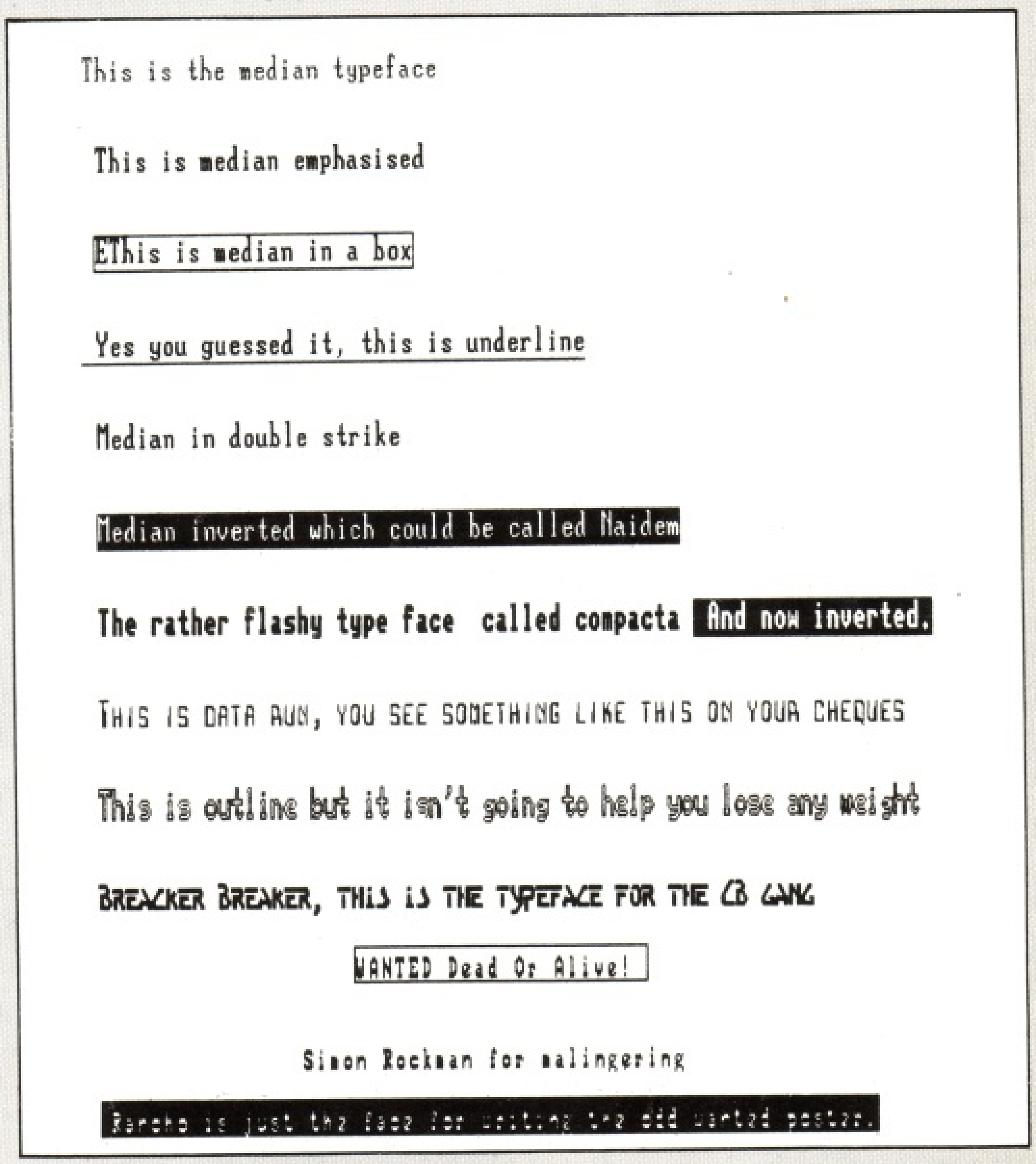
Overall I'm overawed except for a number of reservations which, as a user, I would learn to live with, rather than not use the package.

I dislike not being able to insert text without having to open up a line first. Tasword does have an automatic insert mode but it is appallingly slow and only really works for minor alterations. The mail merge is very good but it's a shame it can't reformat text where merged in data has thrown the original format. Nor will it keep a count on the lines if the number has increased due to merged in text, so the page starts shown on the screen will not necessarily correspond to the actual printout.

Tasword scores by being a better than average word processor with a useful mail merge, but its real strengths rest in its ability to control any printer and place just about any character, in a wide range



From the screen to paper – the Tasword transformation



of typestyles, on the paper. With very little work you could produce some exciting looking documents.

Tasword 8000 is faster than Locoscript and much more flexible if not quite as neat. There is a place for this word processor if only because of the immense and precise control it gives the user over what actually gets on to the paper and the speed at which the thing works, plus the simple fact that the entire package is such good value for money. – **JS**

ABC

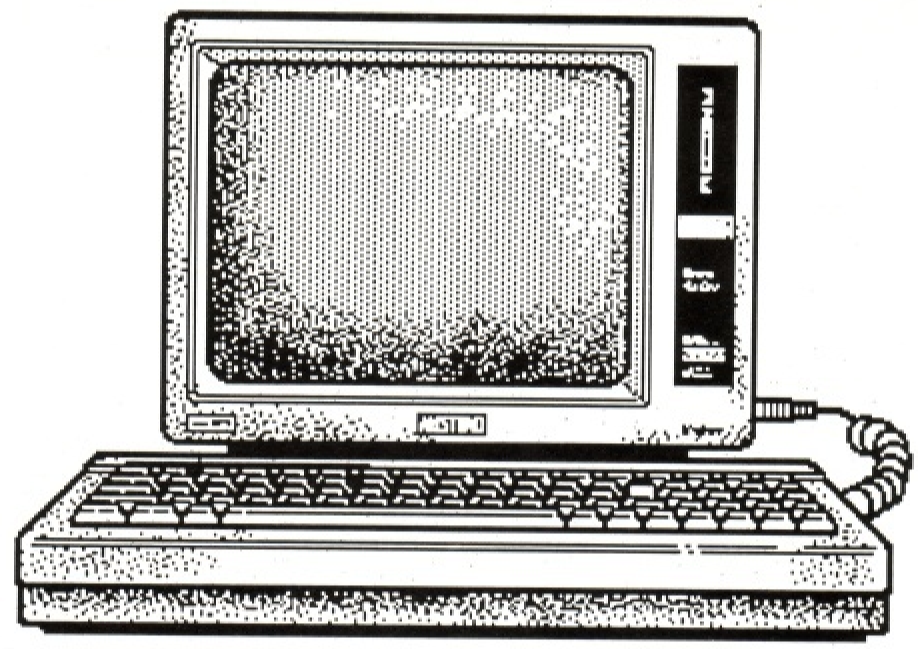
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March 28, 1984

"...What you all need is BrainStorm, a remarkably intelligent notion from Caxton Software...The principle behind the program is so obvious that one wonders why it hasn't been thought of before. It is this: when you start thinking about something which is eventually going to be structured and ordered, you initially think in random jumps. Unconnected ideas flash into the brain...

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ABC FORUM

From next month we will be running letters in two sections. Forum will continue to be the area for airing your opinions, praise and grievances but please address any technical queries and tips to: TechLet, ABC, 169 Kings Road, Brentwood, Essex CM14 4EF.

Ears only for me . . .

After reading your magazine for the past few months I came up with a few things that seem to me quite important. So here they are:

1. Don't listen to reader Geoff Barnard with his benchmark timings for Digital Research's C-Basic Compiler (*ABC* Forum March). His timing may be accurate for test programs that do not define numerical variable as integers, but if they are defined as integers then Wham! – this is where you get the speed.

He remarks that the same rewrite would probably improve the timings for Mallard Basic too. However this is not the case. The improvement in speed in Mallard is nowhere near so great as when integers are used in C-Basic.

I nearly didn't buy the package after reading Mr Barnard's comments but I'm glad I did. The package is excellent. But if you want speed, use integers!

2. Don't listen to reader W.G. Crampton's comments on Digital Research's DR Draw package (*ACU* Write to reply, April). Again, as a result of reading this letter I almost forsook buying it. W.G. Crampton comments: "The instructions for preparing an operating disc were beyond my limited comprehension". Perhaps this was an older release because setting up the package as far as I was concerned was quite simple. Take the DR disc, stick it in, type M: then type A:SUBMIT AMAKE8256, and watch it go. Of course a blank disc is needed too. Hardly complicated. I thought the way the package installed itself was brilliant.

I'm not getting at W.G. Crampton, but I think potential buyers of DR Draw ought to know that it's not as bad as it's made out to be.

3. Don't listen to reader B.L. Hanks (REMs, June) when he asks for "less ABC". There are an awful lot of Joyce owners around who are dying for information on programs, routines and so on – especially me! The articles on GSX are great. Let's have more – how about a series of articles on CP/M Assembler?

Talking of CP/M Assembler, be careful of Ian Sinclair's new book, Introducing Amstrad CP/M Assembly Language. Although it says that it can be used with the Joyce, this is not entirely true. One gets the impression that it was written for the CPC6128 and when the Joyce became popular references to that machine were thrown in.

A Joyce owner would probably be puzzled by references to the ROM in his or her machine. Also, some programs in the book – the best ones – are for the CPC6128 only, so watch out. I get the impression that Ian Sinclair quickly searched through the proofs adding "or PCW8256" to all the references to the CPC6128.

4. Don't listen to Stuart Cole in his article on Jetsam (June issue) when he implies that the return value of ADDREC can be used to ascertain if the disc is full. ADDREC can return four values and not one of them will tell you that the disc is full.

If you try adding a record to a Jetsam file and the disc is full you will receive error number 61 (yes, you've guessed it, "Disc full"), the file is marked inconsistent and you've lost the file forever. I know, I've tried it many times.

What Jetsam does is to mark the file as inconsistent and then close it. If you try re-opening it you will receive error number 115 – "Inconsistent files". As the manual so charmingly puts it, "The user should turn to the latest back-up copy". The only way round the problem, as far as I can see, is to check that there's enough room on the disc before adding records.

5. Don't be fooled into thinking that adding an extra 256k of memory to your Joyce is a straightforward task if you've got an earlier model. I sent off for eight extra chips from Addons of Southampton thinking that all that would be required would be to open up the machine and stick them in the empty sockets.

Not so. I can handle taking the circuit board out to get the chips in, but when I also had to get out my ageing soldering iron to remove a link and solder it on the board elsewhere I nearly threw a wobbler! I did it, but I can tell you – I didn't half sweat! Apparently, later models have a switch that can be simply thrown, but the earlier models don't. So be careful all you Joyce owners without soldering irons, because the adverts don't tell you about it.

Well, that's all the don'ts I can think of for now. On a positive note, I would like to say that I think *ACU* is excellent, but I think it would be even better if there were more Joyce owners in it. How about enlarging *ABC* by a few pages?

Phil Meager,
Anglesey,
North Wales.

ABC: *Well, after reading this I wonder why I bother to get out of bed. Then I wouldn't have to listen to anyone (especially if the landlord can keep Rockcake at bay). Thank you for the advice Phil, I'm sure it will be welcomed by many.*

Many thanks as well for your comments on ABC *– the news about the staples should please you and this does mean we will have room to publish the ding dong that's bound to follow this letter. Hear from someone soon no doubt.*

Games please

I have recently bought a PCW8256 and I am slowly learning to carry out only the

most basic of tasks. I would be very interested to learn, however, whether or not there are any games available on software suitable for this machine.

I am well aware that the hardware is designed for rather more practical matters but I would also like to be able to entertain myself with some of the excellent software currently available. Alternatively, is it possible to write one's own games programs using the CP/M software?

Any help you can give will be most welcome.

Peter J. Moorhouse,
Nottingham.

ABC: *I presume you are interested in games other than adventures, which are quite plentiful on the Joyce. Apart from a couple of chess games and a PacMan game – currently under development at a secret location – I can think of no others.*

However the chess games (one from CPS and another from Amsoft, reviewed next month) have excellent graphics – much better than I would have thought possible – so there is hope.

There might be a shortage of arcade games but there is no shortage of rumours about such games being developed. Now that the games software houses (Melbourne House to name one) are waking up to the fact that there is a demand I am certain it is only a matter of time before some reasonable products reach the market.

One other source worth exploring is the public domain network. There are a variety of games written to work under CP/M (strategy games mostly) and they are all free.

If any bright spark among you has written a game perhaps you might let me know – perhaps we could have a competition.

● *Stop Press: Ocean have released Batman.*

Bamboozled

I am the proud owner of the inventory licensed trade computer control system run from an 80k Husky Hunter computer, storage being made to a Cristie cassette recorder and printing on to a Riteman II 80-column printer.

I am considering buying a CPC6128 and I am wondering if I can use the printer mentioned with this machine. I would be grateful for any information you can give me including communication between my Hunter and the CPC6128.

J. McNulty,
Glenrothes.

ABC: *Ashamed as I am to admit it, I know nothing at all about the Husky micro. As far as communications between it and an Amstrad are concerned you might be in with a chance if your Husky has a serial interface (RS232). You will need to acquire said interface for the Amstrad as well.*

I believe I am correct in thinking that a Riteman is Epson compatible in which case you shouldn't have any problems. I notice that the Riteman printer comes with a Centronics input as standard so that should match up with the Centronics port on the 6128.

After Locoscript, the world

I am one of the many people who bought a PCW8256 specifically because of its word processing facilities. At the time I had absolutely no intention of using the personal computer facilities. However, having sorted out the problems involved in making Locoscript function, I am now prepared to tackle the personal computer potential. The challenge of solving the Locoscript bugs has given me the confidence to feel that "computers" are not so hard or boring to learn to use after all.

Nevertheless I have found it difficult to find a source of general advice on programming that is suitable for the non-expert. There does not seem to be a book available that can advise one on the merits and disadvantages of different programming languages and database management systems.

It has been suggested to me that rather than spend a great deal of time learning how to come to grips with Basic, I would be better off with the database management system Dbase II. I would therefore be grateful if you could explain the difference between a programming language and a database management system.

C.M. Pulteney,
Somerset.

ABC: *Your references to programming and sorting out Locoscript problems got me wondering. Surely you haven't rewritten the thing?*

I suppose it's reasonable to talk about Basic and Dbase II as both being computer languages in that they are both high level – nearer to the way humans communicate than the way computers do – means of imposing our desires on a computer. But Dbase II is limited because it has a specific application in life, namely to coordinate and process computerised data. Basic (Beginners All-purpose Symbolic Instruction Code) is much easier to learn and far more flexible. Not only could you write some reasonable games in Basic but you could write a limited database as well.

If you are learning programming for the first time then either Basic or Pascal is ideal. You already have a pretty smart Basic, namely Mallard. It's ideal for producing a wide range of applications but the fun you can derive from it is limited by the 8256's own shortcomings – no sound or colour.

In the not too distant future we will be running articles about the various languages available for running under CP/M Plus but in the meantime if you fancy dabbling with Pascal or even C then I suggest you get in touch with Software ToolShop who would be willing and able to set you straight.

Reading backwards

As a PCW8256 owner I find that the middle section of your magazine is practically the only part of relevance to me, since I suspect that the other programs listed only apply to the CPC machines – why can't the articles say CPC ONLY at the top?

So I am disappointed that *ABC* forms such a small part of the magazine, and I would like to see this considerably expanded, with a lot more articles plugging the gaps in the inadequate documentation supplied with the system. I think that knocking off the serifs from the VDU display is a skill one least needs to acquire, but I suppose it does give some insight into the capabilities of the Joyce.

Why can't you have a series of articles which start at the beginning, rather than assuming that your readers know something about PCW assembler? Where is one supposed to acquire this knowledge when the documentation doesn't come supplied with the machine?

Is it possible to get back numbers of *ABC* only, which should be free or considerably discounted to PCW owners? Are there any listings available for the PCW? What public domain software exists, and how is it acquired?

Practically all the products available at discounts to members of the user club, which I recently joined, are for CPC computers. There seems to be practically no advantage at present for a Joyce owner joining this club. Are there so few that this minority interest is of little concern to Amstrad?

J. Charlton,
Orpington,
Kent.

ABC: *No doubt your complaint about the size of* ABC *has been resolved. We might be having a coming out party but I'm not sure if the tea kitty could stand it.*

I thought all our articles began at the beginning – you must be reading them back to front! Seriously though, I sympathise but there have always been too many questions for too few pages. I think you must admit that there is trend towards material which is easy to understand, so articles like Command by

Command and Intro to Accounts are pitched at a non technical level. There will be a lot more in the future dealing with a wide variety of subjects.

Back issues of ABC *are available free to all Joyce owners. They come free inside* ACU *which only costs £1.25 (couldn't resist that!). You'll find an order form in the back of each issue.*

I can't tell you what public domain software is available because such a list would fill the next three issues. You can get it from a variety of sources. Either write to R. Smith, 138 Holyte Road, East Grinstead, Sussex RH19 3EA, or – if you have the technology – you can download software from one of the many bulletin boards. Barry Pickles has promised me a list of such boards bearing Amstrad CP/M goodies so I'll publish that next month.

Your last point about discounts for club members is a little unfair. There is quite a range of software for the 8256 machine, but games software will always outnumber application software.

Printing problems continued . . .

I have had the same problem as R. Jones has with SuperCalc (*ABC* June 1986) except mine concerns Multiplan.

I cannot get it to accept alternative printer instructions to vary the typeface in the printer – options setup position. Just how can I make it recognise printer codes? Your suggestion concerning SuperCalc 2 does not work with Multiplan.

Steven Richford,
Cambourne,
Cornwall.

***ABC:** The same control codes are used to change the typestyle, that is, Alt 0 for condensed and Alt R for normal. But they have to be entered in a different way. You must type EXTRA and U instead of using the Alt key. To enter an Esc code, type EXTRA and U followed by [(open square bracket).*

And continued . . .

I have also bought Supercalc 2 for my PCW8256, and I can't get the printer setup codes to work either! You sit there trying Alt 0 or Exit release Shift+M or Exit Shift M all together until you go blue in the face. The machine cheerfully ignores all your efforts and carries on printing the standard typestyle regardless.

What does "(CR when done)" mean on the setup screen and can you give us the exact sequence of key strokes?

G.C.McD. Baillie,
Stevenage,
Herts.

***ABC:** The reply we published two months ago was quite right – it's just that it didn't go the whole way. The problem is that the distribution version of SuperCalc is installed to reset the printer and switch it into condensed mode, as well as selecting 66 lines of continuous stationery, at the beginning of every printout.*

The result is that no matter how hard you try to select a new print style, your efforts are lost when the printer is reset.

The only way round this is to reinstall the SC2.COM file to only send the following sequence for the printer initialisation:

1B 43 42 1B 63

which will select 66 line continuous stationery.

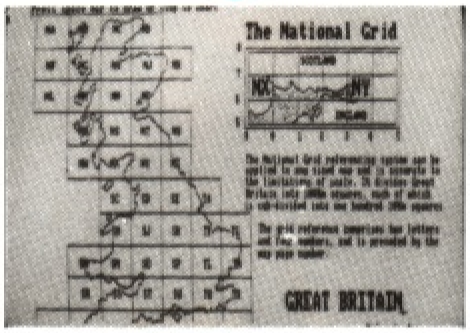
Once you have done this, the procedure we outlined before will work correctly. Type Alt 0 followed by Return for condensed, and Alt R followed by Return for normal – "CR WHEN DONE" is just another way of saying press Return when you've finished.

Appendix D of the manual has all the gen on installing the program.

ABC

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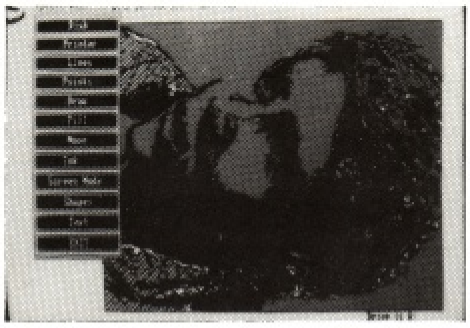
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THE ELECTRIC STUDIO

ABC PROGRAMMING

Digging deeper into databases

The second part of Stuart Cole's series on Mallard Basic adds extra facilities to last time's database and introduces some jetsam commands

I described the basics of writing a database and the difficulties that you can meet last time. The article also introduced some special purpose disc handling commands in Locomotive Software's Mallard Basic and how they can be used to write a very simple database for your PCW8256/512 or CPC6128/664/464+DDI.

The programs described could create a database and then add and retrieve records from it. But they left out a number of functions and features that you might include in a "real" program. This month I will extend the programs to provide extra facilities, and introduce more of Mallard's Jetsam commands on the way.

How Mallard stores its data

The reason Mallard is so good at database applications is that in addition to its normal Basic commands it includes special commands that give each record a label we can readily remember. These are called keys, and typically might be a person's name or national insurance number. The commands are known as Jetsam commands for keyed file access.

We saw last month the special Jetsam OPEN and CLOSE commands to start and finish working with the database, and the BUFFERS command to make the program work efficiently. We also used the FIELD command to define the layout of our database records, LSET to put the data in, ADDREC to add the record to the database, and SEEKKEY followed by GET to retrieve records. Before we can use any further Jetsam commands it's necessry to know a bit more about how it actually stores the data.

Last month I showed how keyed files are actually in two parts – the index file (which contains keys) and the data file (which consists of your records). Let's now look at the files in a little more detail.

Each record in the data file is a normal Basic random record. If you're not sure what that is, it doesn't matter. What is important is that your data can be read or written by first telling Basic which record you want to access, and then using standard Basic commands such as GET or PUT to actually read or write the data. How to use these commands is described later.

The index file contains the keys by which we refer to the records in the data file together with details of which record each key refers to.

We can represent these files as shown in Figure 1.

Each record in the index file just consists of the key value itself plus a pointer to the appropriate record – the record number. An individual index entry can only point to one data record but a number of index entries can point to the same data record.

Mallard keeps special track of the last key and the last record that the program accessed. These are called the current key and current record respectively, and are used in a number of Jetsam commands.

The order of the records does not matter, it's the alphabetical or numerical order of the keys which does. In fact whether a record exists or not is

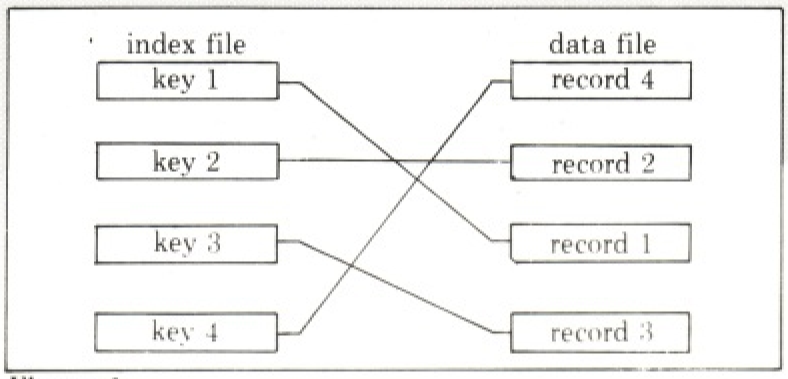


Figure 1.

less important – to Jetsam, not you – than whether a key does. This gives an insight into how to delete records we no longer want, as we shall see below.

Deleting an entry from the database

To delete a record simply to delete its key. This can be illustrated as in Figure 2. The record is deleted too, as shown in Figure 3.

The data in the record is actually still in the file, but next time Jetsam adds a record to the database it might use that (now empty) slot to put the data into. See Figure 4.

To show how this works in practice, let's add this feature to the database program we wrote last time (shown again in Listing 1). This treats names and addresses as one 20 character name and five lines of address with 20 characters per line.

To be able to delete entries from the database we just need to extend lines 500 and 600 to read:

```
500 INPUT "Add, Retrieve, Delete or Quit
     : Type initial letter "; keyread$
600 IF keyread$="A" THEN GOSUB 3000 ELSE
      IF keyread$="R" THEN GOSUB 4000 ELS
     E IF keyread$="D" THEN GOSUB 5000
```

and add the subroutine at 5000 to delete a record. The subroutine at 3000 already adds a record and the one at 4000 retrieves a record.

The subroutine must first identify the record to be deleted and follow this by an instruction to delete the key. The simplest way to identify the record is to use our existing retrieve subroutine, and a special Jetsam command can then delete the key. This command is DELKEY. It has two different forms – the simpler one deletes the current key, and the other deletes a specified key.

The effect of the retrieve subroutine is to make the retrieved key the current key, so we can use the simpler form of DELKEY.

```
DELKEY (keyfile, 2)
```

where keyfile is the name we used for the file reference of our keyed file. 2 is another of the magic numbers which is explained later in this article.

The subroutine we will use to delete a record is:

```
5000 '
5100 ' Delete a record from the database
5200 '
5300 GOSUB 4000:              REM - look u
     p record to delete
5400 IF rc%<>0 THEN RETURN: REM - exit i
     mmediately if look up failed
5500 rc% = DELKEY (keyfile, 2): REM - de
     lete the current record
5600 if rc% > 103 THEN PRINT "Failed to
     delete record" ELSE rc%=0
5700 RETURN
```

Note how once more it checks the return code after deleting, and it checks that it did retrieve a record successfully before trying to delete it. In this case, however, a non-zero return code can mean success! So the program checks for all successful return codes (up to 103). If it was successful, the subroutine sets the return code to zero, so that other parts of the program can continue simply to assume that a non-zero return code means failure.

Now we are deleting records it is important to check that we are being consistent in what we use as the key. The Line INPUT command will accept almost anything, so if, for example, we typed a space at the end of the name, this would become part of the key and we'd always need to type the space when referring to that person.

We can get round this by using LSET again, this time to make our keys a fixed length padded with spaces. So we need to change lines 1300 and 4300 to read:

```
1300 LINE INPUT "Name "; temp$
1310 pername$ = SPACE$(20): LSET pername
     $ = temp$
```

```
4300 LINE INPUT "Type name to look up: "
     ; temp$
4310 pername$ = SPACE$(20): LSET pername
     $ = temp$
```

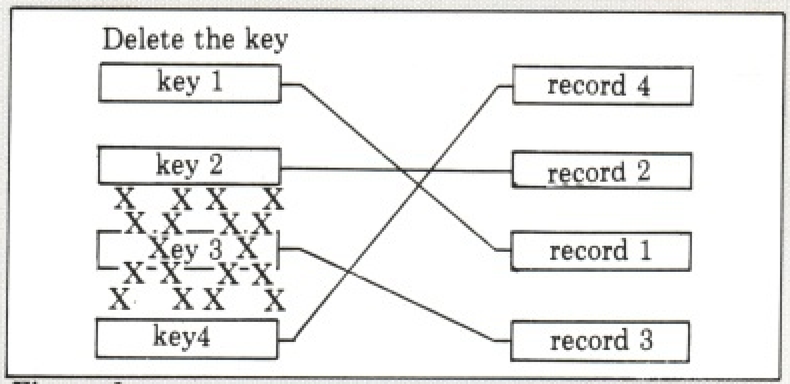


Figure 2.

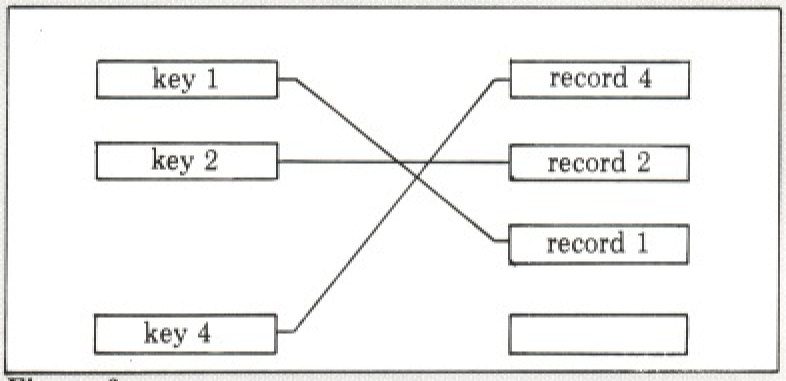


Figure 3.

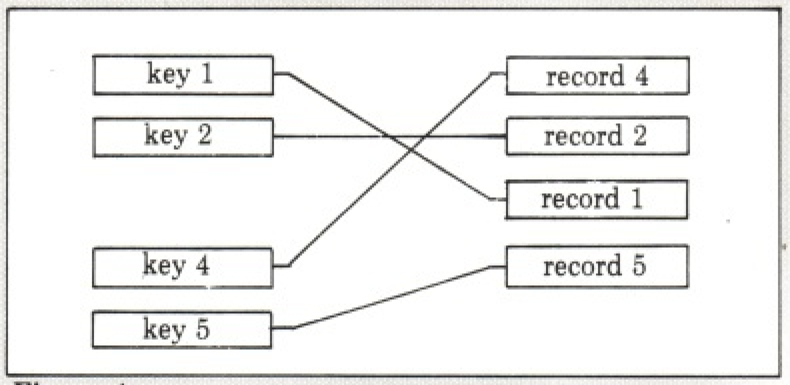


Figure 4.

Changing an entry in the database

This is really two different problems, depending on what we are changing. The simplest is when we are just changing a part of the record that we don't use as a key, say if Mr Jones moves house. In this case we can just change the data. However if the item we are changing is part of the key, say if Miss Smith gets married and changes her name, then we have to re-index the entry too.

First, let's consider the simple case of someone moving house – the address changes, but nothing else does. We must add another item to the list of choices for the user of our program:

```
500 INPUT "Add, Retrieve, Change, Delete
      or Quit:Type initial letter "; keyr
     ead$
600 IF keyread$="A" THEN GOSUB 3000 ELSE
      IF keyread$="R" THEN GOSUB 4000 ELS
     E IF keyread$="D" THEN GOSUB 5000 EL
     SE IF keyread$="C" THEN GOSUB 6000
```

and another subroutine to carry out the change.

As before, we'll use the retrieve subroutine to make the record we want to

work with into the current record. So our subroutine will start:

```
6000 '
6100 ' Change a record in the database
6200 '
6300 GOSUB 4000:                REM - look u
     p record to change
6400 IF rc%<>0 THEN RETURN: REM - exit i
     mmediately if look up failed
```

Now we have to change the current record. Our program will need to ask for the new address and set up the field strings. If fact, this part of the program is almost identical to the commands we used in the Add Record subroutine to set up the record in the first place. So now is a good time to take the main part of the Add Record subroutine and make it a new subroutine in its own right:

```
10000 '


10100 ' Set up a record's field strings
10200 '
10300 GOSUB 1000: REM - read in new name
       and address
10400 GOSUB 2000: REM - display it to ch
      eck it's OK
10500 INPUT "Is that correct "; nameok$
10600 IF nameok$ = "N" GOTO 10300: REM -
       loop and ask again if not OK
10700 LSET namefld$  = pername$
10710 LSET addrfld1$ = peraddr$(1)
10720 LSET addrfld2$ = peraddr$(2)
10730 LSET addrfld3$ = peraddr$(3)
10740 LSET addrfld4$ = peraddr$(4)
10750 LSET addrfld5$ = peraddr$(5)
10800 RETURN
```

and replace lines 3300-3750 with:

```
3300 GOSUB 10000: REM - accept new name
     and address
```

and add to the change subroutine:

```
6500 GOSUB 10000:                REM - accept
      name and changed address.
```

Whereas in the Add subroutine, we used ADDREC to add both the record and its key to the database, here we only want to change the record's data. As the record is the current record we can use a standard Basic command, PUT. This puts the data we have set into the field strings into the current record of the file we specify. So the complete subroutine to change the address is:

```
6000 '
6100 ' Change a record in the database
6200 '
6300 GOSUB 4000:                REM - look u
     p record to change
6400 IF rc%<>0 THEN RETURN: REM - exit i
     mmediately if look up failed
6500 GOSUB 10000:                REM - accept
      name and changed address.
6600 PUT keyfile
6700 RETURN
```

Changing and re-indexing an entry

The more difficult case of changing a record is when this changes the value that we are using as a key. In such cases, there are two approaches:

1. Change the data in the record as in the simple case, then re-index.
2. Delete both record and key, and add again from scratch.

The second of these two approaches is simpler and easier to write. We could program it by just changing a couple of lines in the code above:

```
6000 '
6100 ' Change a record in the database
6200 '
6300 GOSUB 5000:                REM - look u
     p and delete record to change
6400 IF rc%<>0 THEN RETURN: REM - exit i
     mmediately if look up failed


6500 GOSUB 10000:                REM - accept
      name and changed address.
6600 rc% = ADDREC (keyfile, 2, 0, pernam
     e$): REM - replace new details
6650 if rc% <> 0 THEN PRINT "Replacing r
     ecord failed, Return Code "; rc%
6700 RETURN
```

But this approach is less efficient and what is worse, it won't always work. One case when it fails is when there is more than one key indexing a particular record.

The first approach is rather more complicated. We have to save the old name – and any other field we were using as an index – and note if it changes. If it does, we first change the data and we then change the key. If it doesn't we just change the data as before. So, the subroutine becomes:

```
6100 ' Change a record in the database
6200 '
6300 GOSUB 4000:                REM - look u
     p record to change
6400 IF rc%<>0 THEN RETURN: REM - exit i
     mmediately if look up failed
6450 oldname$ = pername$:   REM - save o
     ld name
6500 GOSUB 10000:                REM - accept
      name and changed address.
6600 PUT keyfile
6700 IF oldname$ <> pername$ THEN GOSUB
     11000: REM if key changed reindex
6900 RETURN
```

In order to re-index a record, you simply add the new key and delete the old one – in that order. If you try deleting the old key first (and it's the only key) this will delete the record too. We have just used precisely this effect to delete records from the database!

Once again our subroutine can make use of the current key and current record values. But this time we'll have to keep a note of the key to delete and use the more complicated form of DELKEY. Adding the key will set the new key as the current key, so if we use the simple form of DELKEY, we'll just delete the new key – which would be pointless! The subroutine is:

```
11000 '
11100 ' Change the current key to pernam
      e$
11200 '
11300 oldrec  = FETCHREC (keyfile):  REM
       - remember current record
11400 rc% = ADDKEY (keyfile, 2, 0, perna
      me$, oldrec):  REM - add new key
11500 IF rc% = 0 THEN rc% = DELKEY (keyf
      ile, 2, 0, oldname$, oldrec):IF rc
      %<=103 THEN rc%=0:  REM - Delete o
      ld key & tidy rc%
11600 IF rc% <> 0 THEN PRINT "Changing k
      ey value failed, RC = "; rc%
11700 RETURN
```

This uses a number of new commands. They are:

FETCHREC – which requires as a parameter the number of the file we're using and returns the record number of the current record. This record number is needed in the next command, which adds a new key pointing to that record.

ADDKEY – a Jetsam function, similar to ADDREC, but where ADDREC added a record to the database and made an index entry for it, ADDKEY takes the record as an extra parameter, and simply makes an index entry for it with the new key.

DELKEY – the same Jetsam function we used earlier, but this time it is the complicated form. It takes some extra parameters which are another magic number – the value of the key we are going to delete – and the record number it points to. We have to specify both the key and the record number as there could be two keys with the same value pointing at two different records, say two Mr Browns. Note that, once again, we convert all successful return codes into zero.

Magic numbers

In both last month's and this article, I have mentioned some parameters you have to give special values, but without saying what these mean.

The BUFFERS command which we need at the beginning of the program requires one parameter. I suggested 6. This is the number of 128 byte parts of the index which Jetsam can keep in memory at once (the number of buffers). The bigger the number, the more likely Jetsam is to find the record in the data file corresponding to a key without first having to read in part of the index file.

The value of this number should be 6 or more. The drawback to setting it to something very big is that the space available for your program is reduced by 128 bytes per buffer.

A number of the Jetsam commands needed one or two numbers, typically given values 2 and 0 above. For example:

ADDKEY (keyfile, 2, 0, pername$, oldrec)

If you look in the Mallard Basic reference manual, you'll see that these numbers, 2 and 0, are the lock and rank respectively.

The lock parameter is really there for more advanced computers than the Amstrads. Some of these, called multi-user systems, can allow several programs to run simultaneously. A network of IBM PCs is a good example of a multi-user system.

There is a special version of Mallard which runs on multi-user systems so that several programs can access the same database. On these systems it is necessary to prevent two programs changing the same record at the same time, since otherwise chaos would result. This is where the lock parameter comes in. It's a way of reserving part of the database for a particular purpose. The value 2 means a "write lock" and is the severest. If you use this (as the program we've written does), then your program will work on a multi-user system too.

The rank parameter is for when you are

indexing a database in several ways, for example by a person's name and by post town. It indicates to which index or rank you want to add a key. All keys in our program were in index 0. If we were to index by post town as well, then we'd use ADDREC for the first index as above, and add an ADDKEY command for the second index, with rank 1.

All I've given you here is an introduction to Mallard Basic's very powerful data handling commands. There's obviously more to writing a real program than I've covered in these two articles, but the program I've described does cover all the essential commands for a working prototype.

As I said at the start, don't just sit there – type in the program I've described, or better still write a program to try these commands out for yourself. All these commands are described in detail in the Mallard Basic reference manual, together with a number of extra Jetsam commands.

So once you've made your program work, see how easy it is to improve it and give it extra features. Things you might try are to print out the whole database, or to index it by first name and by surname.

```
10 BUFFERS 6
20 keyfile=1: recleng=122
30 OPEN "K", keyfile, "ADDRESS.DAT", "ADDRESS.KEY", 2, recleng
40 FIELD keyfile, 20 AS namefld$, 20 AS addrfld1$, 20 AS addrfld2$, 20 AS addrfld3$, 20 AS addrfld4$, 20 AS addrfld5$
50 DIM pername$(5)
100 '
200 ' MAIN PROGRAM LOOP
300 ' =================
400 '
500 INPUT "Add, Retrieve, Change, Delete or Quit: Type initial letter "; keyread$
600 IF keyread$="A" THEN GOSUB 3000 ELSE IF keyread$="R" THEN GOSUB 4000 ELSE IF keyread$="D" THEN GOSUB 5000 ELSE     IF keyread$="C" THEN GOSUB 6000
700 IF keyread$ <> "Q" GOTO 100: REM - loop until "Q" is typed.
800 CLOSE keyfile
900 END
1000 '
1100 ' Subroutine to read Name and Address
1200 '
1300 LINE INPUT "Name "; temp$
1310 pername$=SPACE$(20): LSET pername$=temp$
1400 FOR i% = 1 TO 5
1500      LINE INPUT "Address Line "; peraddr$(i%)
1600 NEXT i%
1700 RETURN
2000 '
2100 ' Subroutine to display Name and Address
2200 '
2300 PRINT pername$
2400 FOR i% = 1 TO 5
2500      PRINT peraddr$(i%)
2600 NEXT i%
2700 RETURN
3000 '
3100 ' Add a record to the database
3200 '
3300 GOSUB 10000: REM - accept new name and address
3760 rc% = ADDREC (keyfile, 2, 0, pername$)
3770 IF rc% <> 0 THEN PRINT "ADDREC FAILED, Return Code "; rc%
3900 RETURN
4000 '
4100 ' Retrieve record from database
4200 '
4300 LINE INPUT "Type name to look up: "; temp$
4310 pername$=SPACE$(20): LSET pername$=temp$
4400 rc% = SEEKKEY (keyfile, 2, 0, pername$)
4410 IF rc% <> 0 THEN PRINT "Failed to seek ";pername$,"RC ";rc%: RETURN
4420 GET keyfile
4430 pername$ = namefld$
4440 peraddr$(1) = addrfld1$
4450 peraddr$(2) = addrfld2$
4460 peraddr$(3) = addrfld3$
4470 peraddr$(4) = addrfld4$
4480 peraddr$(5) = addrfld5$
4500 GOSUB 2000: REM - display retrieved record
4900 RETURN
5000 '
5100 ' Delete a record from the database
5200 '
5300 GOSUB 4000:              REM - look up record to delete
5400 IF rc%<>0 THEN RETURN: REM - exit immediately if look up failed
5500 rc% = DELKEY (keyfile, 2): REM - delete the current record
5600 IF rc% > 103 THEN PRINT "Failed to delete record" ELSE rc% = 0
5700 RETURN
6000 '
6100 ' Change a record in the database
6200 '
6300 GOSUB 4000:              REM - look up record to change
6400 IF rc%<>0 THEN RETURN: REM - exit immediatelyif look up failed
6450 oldname$ = pername$:   REM - save old name
6500 GOSUB 10000:             REM - accept name and changed address.
6600 PUT keyfile
6650 PRINT "<";oldname$;">  <"; pername$; ">"
6700 IF oldname$ <> pername$ THEN GOSUB 11000: REM if key changed reindex
6900 RETURN
10000 '
10100 ' Set up a record's field strings
10200 '
10300 GOSUB 1000: REM - read in new name and address
10400 GOSUB 2000: REM - display it to check it's OK
10500 INPUT "Is that correct "; nameok$
10600 IF nameok$ = "N" GOTO 10300: REM - loop and ask again if not OK
10700 LSET namefld$  = pername$
10710 LSET addrfld1$ = peraddr$(1)
10720 LSET addrfld2$ = peraddr$(2)
10730 LSET addrfld3$ = peraddr$(3)
10740 LSET addrfld4$ = peraddr$(4)
10750 LSET addrfld5$ = peraddr$(5)
10800 RETURN
11000 '
11100 ' Change the current key to pername$
11200 '
11300 oldrec  = FETCHREC (keyfile): REM - remember current record
11400 rc% = ADDKEY (keyfile, 2, 0, pername$, oldrec):   REM - add new key
11500 IF rc% = 0 THEN rc% = DELKEY (keyfile, 2, 0, oldname$, oldrec): IF rc%<=103 THEN rc%=0
11600 IF rc% <> 0 THEN PRINT "Changing key value failed, RC = "; rc%
11700 RETURN
```

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Connect charge: 3.5p per minute or part – cheap rate; 11p per minute or part – standard rate.
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Cheap rate is from 7pm to 8am, Monday to Friday, all day Saturday and Sunday and public holidays; Standard rate is from 8am to 7pm, Monday to Friday, excluding public holidays.

Filing charge: 20p per unit of 2,048 characters per month.
Applicable for storage of information, such as telex, short codes and mail files. The number of units used is an average calculated by reference to a daily sample.

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Deferred messages sent on the night service are subject to a 10 per cent discount.

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It is not possible to deliver a telex without a mailbox reference. If a telex is received without a mailbox reference the sender will be advised of non-delivery and asked to provide a mailbox address.
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You must have three things in order to use MicroLink: a computer (it can be any make of micro, hand-held device or even an electronic typewriter provided it has communications facilities), a modem (it can be a simple Prestel type using 1200/75 baud, or a more sophisticated one operating at 300/300 or 1200/1200 baud), and appropriate communications software.

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ABC SPECIAL



Advanced Locoscript for beginners

Eddie, Pete and Julie work inside an 8256. A recent promotion for Julie has aroused Pete's interest.

"Eddie . . ." "Yes Pete", said Eddie without looking up, expecting another of Pete's really seaching questions about Locoscript.

"Why does your office always look so untidy?" Eddie looked around him, startled by Pete's attack on his working environment. "It's probably 'cos you're always here asking stupid questions, stopping me from tidying up". Eddie carried on scribbling on his notepad. Pete was quiet for a while then said: "Eddie . . ."

"Yes Pete", said Eddie scribbling away. "Wouldn't it be a good idea if you got some shelves to store some of these things?" "Hm, possibly", murmured Eddie still scribbling.

"A bit like blocks and phrases in Locoscript", ventured Pete. "Ahh ha!" Eddie threw down his pen on to the desk. "I knew you were trying to wheedle some information out of me". "What me? No – still, while you've raised the subject, perhaps you could cast a few pearls of wisdom in this direction concerning blocks and phrases".

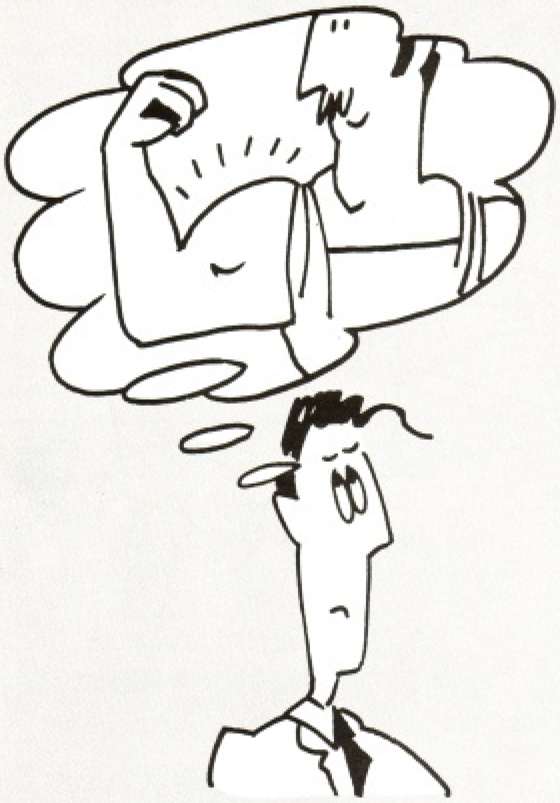
"Pearls before swine, is that what you mean?" Pete pulled his hurt expression at Eddie's sarcastic remark. "Why the sudden interest in blocks? It couldn't have anything to do with Julie starting to

work in that department, could it? Or anything to do with the huge guy with muscles who moves the blocks around?"

Pete scowled. Eddie chuckled "Ha ha, what do you want to know?" Pete was still scowling. "I want to know about blocks and phrases", he muttered sulkily.

"Okay, I'll tell you about them. To introduce the idea of handling blocks and phrases let's first talk about using the Cut key. You know that to cut an area of text from the document, the cursor is moved to the place to begin cutting and Cut is pressed". Pete nodded.

"Then you use the cursor keys", Eddie continued, "to select the area to cut. This area is highlighted so that it shows up



clearly. Cut is then pressed again and the text is removed and the document reformatted. It is a special feature of Locoscript that it allows text to be appointed in either direction, up or down. And the highlighted area expands or contracts accordingly".

"I've always thought that was good" said Pete.

"Once the area of text has been selected the Cut key is pressed and whoosh, whoosh, whoosh, the text disappears. As well as using the cursor keys the text movement keys can be used to position the cursor. A useful short cut – geddit – to remove an unwanted template when a document has just been created, is Cut Page Cut.

"The next stage is cutting and saving the text. Instead of using the Cut key the Copy key is used. Text is highlighted in the same way and then Cut is pressed. On line 3 of the screen, which is where most screen prompts appear, the prompt is asking for the text to be placed in either a block 0 to 9 or a phrase A to Z. Say, for example that the 3 key was pressed. This places the text that is cut from the screen into block 3 for temporary storage.

"A neat feature of Locoscript is that when it is asking for a number, the keys on the numeric keypad change from working like cursor keys and so on, to working as a numeric keypad. Once the text is stored the cursor can be moved to the place where the text is to be reinserted and Paste and 3 will trundle out the saved text.

"This feature of Locoscript is intended for chopping and changing the order of paragraphs and lines within the text. Once the text has been stored, Paste will trundle it out as many times as wanted". Eddie paused for breath.

"But where does the stored text go?" asked Pete.

"I'm coming to that, all in good time. After pressing Copy there is the choice of pressing Cut to save and remove the text, or Copy again, to simply save the text. This is so that useful paragraphs of text can be shovelled up and stored away for future use.

"Now, you asked where the blocks are stored, knowing that it is possible to define a large area, and also knowing that sort of thing requires storage space somewhere. In fact blocks are stored on to the ramdisc, drive M, and they are only limited in size by the amount of free space on the ramdisc.

"There's something important you should know about blocks. When editing a document is finished, all the blocks are thrown away. However there is a mechanism for storing blocks permanently and this can be used to transfer blocks of text between documents. This is accomplished by pressing F8 (save a block), and pressing the appropriate number".

"How do you know which blocks are being used?" butted in Pete.

"Because the F8 menu tells you which blocks and phrases are used by displaying their number or letter".

"And how can you get the block back after it has been saved?"

"To get the block back, the function key F7 is used and then Insert Text. The disc manager screen appears and the block is picked up. Doing this does not reload the block so that it can be pasted once more. It must be stored again using Copy as before".

"Can you edit a block saved on disc?" Pete asked.

"A block is not a document so it can't be edited".

"So what is the difference between blocks and phrases?"

"Blocks are for large chunks of text, paragraphs and such like. A phrase is a little friend of a block for storing useful sentences and words. It is possible to save up to 26 phrases (in a similar manner to blocks), each one beginning with a letter. It is useful to store phrases under the appropriate letter such as J for Julie".

"Or M for mnemonic" suggested Pete.

"Phrases have a limit. There is space for around 500 characters for all the phrases combined to fit into. This storage space is within the main memory and once defined the phrases are available to all documents until switch off. On the Locoscript disc supplied with the machine is a file called Phrases.std. When Locoscript is first booted, this file is read into the phrase store and is available to any document created".

Pete was wandering around the office and picked up a stapler to fiddle with. "So useful phrases such as owwwww-ooww-oww!" "I don't think that's a very useful phrase" said Eddie calmly. "I got my finger caught in the stapler" replied Pete.

"Yes, you can have your whole life story chopped into pieces and stored for instant recall. Such as 'clumsy idiot', 'good for nothing', 'thick as two short planks'."

"Do you have a plaster?" asked Pete. "If I could only find it, in this untidy office", said Eddie without sympathy. 'I'm bleeding'', stated Pete. Eddie handed him an ash tray and continued.

"There is a Phrases.std file supplied on the Locoscript system disc and this is full of useful phrases for estate agents".

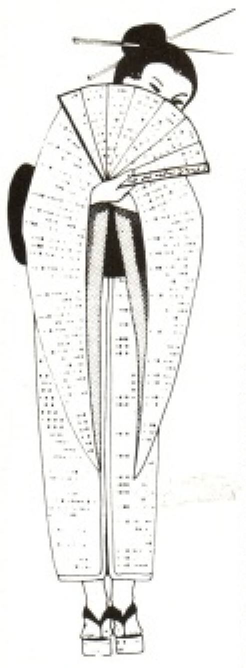
"Estate agents?" queried Pete. "Yes, estate agents. But it's possible to save the phrases that have been stored since Locoscript was booted. Pressing F8 for blocks and moving to Save All Phrases and pressing Enter saves the phrases. This happens when the document is exited and the file is saved on to the ramdisc under the name 'Phrases.std'. It is up to the user of Locoscript to copy or move the Phrases.std file across to a floppy disc before switching off the computer, to prevent it being lost.

"The Locoscript system disc, supplied with the machine, contains a file of useful phrases for correspondence. This is in addition to the Phrases.std file which is used for examples in the manual. The correspondence phrases are held in a file called Phrases.let and this can be used by copying and renaming the file.

"Phrases files cannot be edited but using F7 and Insert Text, a phrase file can be read into a document and all the phrases can be seen. And that, my friend, is about all there is time for today", finished Eddie.

"Thanks Eddie", said Pete, "I'll see you tomorrow". Pete trotted off in search of a plaster for his wounded finger. Eddie gazed round his chaotic office. "I'll tidy this up tomorrow", he thought. "Well, if I'm not too busy, I will. Maybe what I need is a bigger desk".

ABC



This means YOU!

Imagine a program listing. A listing for an amazing action game, about 3k or 4k long. Mostly it is written in Basic but it might have a few machine code routines to do some of the things that need speed. It works on the 464 (with or without disc drive), 664 and 6128. It might run (using Mallard Basic) on the PCW8256. Did I hear you say you have one right here in your pocket? I did? Hand it over. We want to print it!

Yes, that's right, we want lots of shortish programs for our readers to type in. They don't have to be games – we just have a preference for them. They can be anything that we find interesting. The things we don't find interesting are biorythm programs, pools predictors, simple databases, or anything to do with quadratic equations – unless they are written in one line, cellotaped to half a million quid or draw a pretty picture on the screen.

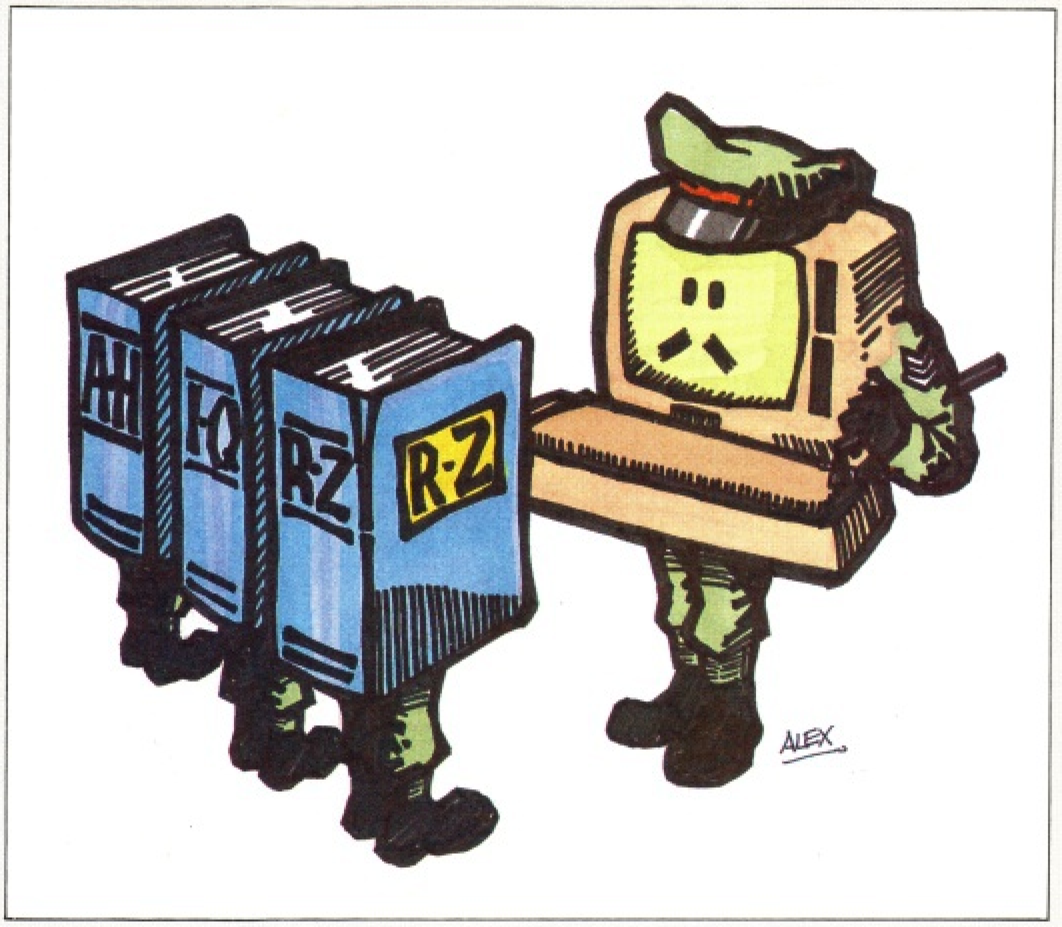
There are a few golden rules for submitting programs. Remember that you are writing a program for publication. Make your program easy to debug. Don't include unlistable characters in the program. Document start addresses and length of code when using machine code. Send the program on tape or cassette and include a SAE if you want it back. If you think the program does something particularly clever, write an explanation of the routine that does it. Don't include commands that work only on one particular machine.

Now you know what to do, get cracking! Send off your program today to:

LIZ TING

Liz Ting
Amstrad Computer User
169 Kings Road
Brentwood CM14 4EF

ABC TUTORIAL



At first sight CP/M might seem ghastly. Yet once elements of it have been mastered and its logic appreciated, it takes on a certain charm. Those willing to poke around and explore will find there are always more commands waiting to be discovered. This series is intended to explain the CP/M commands in detail, dealing with each in turn.

Command by command

DIR

To get an idea of what's in a book you would look at the contents page or the index. An overall picture of a volume could be gained by quickly flicking through the pages. Alas, discs aren't quite so easy. Open the shutter if you dare, but all you are going to see is the magnetic film inside.

To find out what files are on a disc you will have to use the DIR command which will have a look at a disc's contents for you and tell you what it finds. Of course, all it can report back with is the filenames you allocated, probably meaningful when you created them but rendered obscure by time.

The value of DIR is often frustrated by meaningless filenames – you have eight characters and three to pack as much sense into a name as you can.

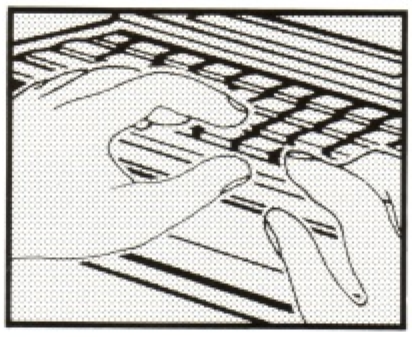
What DIR does when you invoke it is to read a track of the disc reserved just to hold the directory information. This track doesn't only keep the names of files, it also lists their location on the disc so the computer can find the contents. It's useful to remember that this all important track is created when a disc is formatted. If you try to DIR an unformatted disc CP/M will report "track 0, sector 1 missing address mark" and award you four silly points. Sometimes a disc can be formatted but empty, in which case DIR will report "No File".

In use

The prompt shows the current logged-on drive. If you have B> on the left of your screen then you are currently logged-on to drive B:. Just typing DIR at the prompt will give you the contents of the logged-on disc. It isn't necessary to log-on to a drive just to get a directory of it. If you wanted a directory of the M: drive without moving from A: you would type:

DIR M:

After the directory you will notice that control returns to A: not M:. A useful, but little known CP/M command, allows you to chain commands together so you could move to the M: drive and get a



directory in one swoop – try this at the prompt:

M: !DIR

Again you get the contents of M: but now you are logged-on to the M: drive. The exclamation mark is great, especially if you have a number of commands you want to repeat over and over again with Alt W (Alt is the same as Ctrl on a Joyce and Ctrl W repeats the last CP/M command entered).

DIR doesn't necessarily tell the whole story. Filenames can have attributes which alter the way a file is treated by CP/M. For example, a read only (RO) attribute can be appended by SET.COM and result in a file which you will not be able to delete, until it has been restored to read and write (RW) status.

Other attributes will affect the way a file is accessed by DIR command. By default, files have a DIR attribute and will show themselves after the DIR command. But if a file has a SYS attribute, then you must use DIRSYS (shortened to DIRS if you like). Although files with a system attribute will be hidden from DIR you will be warned of their presence, if they have a .COM extent, with the message "System File(s) exist". Try a DIR on the Locoscript side of your system disc, then a DIRS.

Transient commands

So far we have only examined DIR as a built-in command. Notice how the command is always to hand without your having to load in a COM file. Built-in commands are always resident while transient commands, like PIP, are loaded and then executed. DIR is like ERASE, TYPE and RENAME – it is both a built-in command and transient. As a transient command DIR has many more powerful tricks to offer.

To use any of the following commands you must have DIR.COM on the logged drive, or you must route the command via a drive which does have the COM file:
A>DIR a:[full] produces a directory of A: drive using DIR.COM on the A: drive
A>b:DIR M:[user=all] sends CP/M off to the B: drive (though A: remains as the logged on drive).

If you use an option which needs DIR.COM you will be reprimanded if it isn't available. Don't worry about the bits in the square brackets – I'm coming to those.

CP/M switches

Options, or switches as some prefer to call them, are the parameters contained within square brackets. You're going to meet these frequently during this series. The switches are the means by which you tell a transient command exactly what it is you want done. Listed below are most of the available switches for DIR.COM together with their explanations and some examples of use.

Date
CP/M version 3 allows files to be marked with the date and time of creation or alteration – more on that soon. This switch will reveal the date stampings on each file:
DIR A:[date]

Drive = all
Neat this one. If you want a directory of all drives this is the chap. Used with the masking facilities of DIR it's great for seeking out files. If you prefer you can use DISK instead of DRIVE, the effect is the same. It works on the M: drive as well:
DIR [drive=all]*.COM lists all COM files on all drives.
DIR [drive=(a,m)]*.COM lists all COM files on drives A: and M:.

Masking

Wild cards are invaluable in any operating system. They allow you to designate groups of files which conform to a template defined using either the * character or a ?.

* can be used to replace a number of characters whereas a ? replaces just one. For example, T*.* means any file name beginning with T and having any extent.

???Tha*.C?? is a template for any file name having THA as the fourth, fifth and sixth letters and an extent starting C and any two letters.

Master wildcards the most useful things since sliced sectors.

Exclude
Masking allows you to search for list files which fit within a specified format. Exclude allows the masking to work in reverse. Instead of specifying the type of file you want to see, Exclude lets you specify those you don't want to see.
DIR A: [exclude] *.COM shows all files on A: except for .COM files

FF
This sends a form feed command to the printer – useful when listing a directory to the printer after using Ctrl P to toggle the printer on.

Full
This switch shows the size of a file in kilobytes, the number of 128 byte records allocated to it as well as the files attributes. If applicable this switch will also show the password protection mode and the time stamps.

No page
With a large directory DIR will display the information one screen at a time, just so you don't miss it. However when echoing output to the printer with Ctrl P you might not want "Press Return to continue" to keep appearing on your

No sort
By default DIR sorts files into alphabetical order before it lets you see them on the screen. If you are awkward you might want the files listed in order of their appearance on the disc directory.

RO
Displays just those files which have been set to read only.

RW
Same as RO but this time just shows the files set to read write.

Size
Lists files with their size in kilobytes. Like Full this switch also gives information on the disc as a whole by telling you the total bytes, total 1k blocks, total records (128 byte) allocated, number of files and the number of used or maximum allowed directory entries.

SYS
Same as DIRS in that this displays all files having a SYS attribute.

User=all
Rather like drive except rather than specifying drives this switch specifies user areas:
DIR [user=all] *.com lists COM files in all user areas on the default drive.
DIR [user=1,5,8] lists all files in areas 1, 5 and 8.

User areas

These can be treated in the same way as drives. The default directory is 0A:, the 0 being the user area. To change to user area 4 just type 4: and the prompt will change to 4A: If you are in 0A: and want a directory of user 5B: do this:
A> dir 5B:
The user area can be listed without having to use transient DIR, but if you want to use switches on a user area make sure that the DIR.COM file is at hand.

Combining switches

As shown by the example directory of my three drives, switches can be combined simply by separating each switch with a comma. The following is complicated but quite legal:
DIR [drive=all,user=all,full, nopage,rw]*.jul *.jun*.bak

Work it through and you can see that what I get is a full directory of all drives and all user areas but only of files ending in either JUL, JUN or BAK with a read write attribute. The list is to be scrolled without pausing at pages. Simple?

Next time

In the next article it's the turn of PIP.com. We haven't finished with directories quite yet – Andrew Clarke will be discussing some of the public domain software which can make keeping track of files a great deal easier. If you thought DIR had a lot going for it just wait and see what you can do with the PD stuff.

ABC

ABC REVIEW

Hanging on to your sanity

Debit and Credit make their second appearance with some more advice on computerising your business. This month it's time to ask yourself some probing questions. (Debit and Credit appear courtesy of Barry Pickles and John Burke.)

In the first part of this series we posed three questions that users should answer before introducing a computer to their business. We shall now explore these questions in depth, beginning with the first – will a computer really help my business?

The answer to this question is, more often than not, a positive one. However a number of conditions need to be met.

Collectively the sales, purchase and nominal ledgers form the principal books of account for any company, which is why they are so often grouped together in account suites and provide a complete picture of the state of a company's affairs. A good ledger system gives you a breakdown of where money has been made, where it has been spent, how much is owed and how much you owe to creditors.

It follows, therefore, that a bad manual system will produce a bad computer system. In the industry there is a mnemonic for this – GIGO (Garbage In, Garbage Out).

Since most of you will have neither the time nor the capability to produce your own custom accounts package, you will need some guidance on what's available commercially. This is one of the purposes of magazines such as *ABC* – to separate the pure metal from the dross. So now let's look at what a computer system will not do, so that we can have a clearer picture of how it can help your business.

A computer cannot produce accurate accounting if the manual system is itself inaccurate. On the contrary, a computer will highlight any deficiencies in your existing system. For example, if a trial balance is taken out and single entries have been made without posting the corresponding double-entry, then the account will not balance, and no computer system available will ever make it do so until you correct the original mistake.

In the same vein, to take a more common error, if items are improperly analysed, say sales of fixed assets are posted as credit sales, the computer cannot normally differentiate and will accept the entry. Here you will successfully produce a trial balance – because arithmetically all the entries are correct – but the profit and loss report will be incorrect because sales are overstated (therefore, profit is overstated) and the fixed assets will also be overstated, because the balance sheet will show an asset being earned which has been sold!

On the plus side, if your opening balances are indeed accurate, then the good commercial packages will introduce you to more accurate accounting methods with the minimum of effort.

Owners of small businesses – and the smaller they are, the more this applies – quite often lack the necessary expertise to devise sophisticated accounting analyses and may not have the resources to take on an experienced bookkeeper. A good commercial package will enable such users to produce detailed reports, which an accountant can use to offer in-depth advice and guidance.

Horses for courses

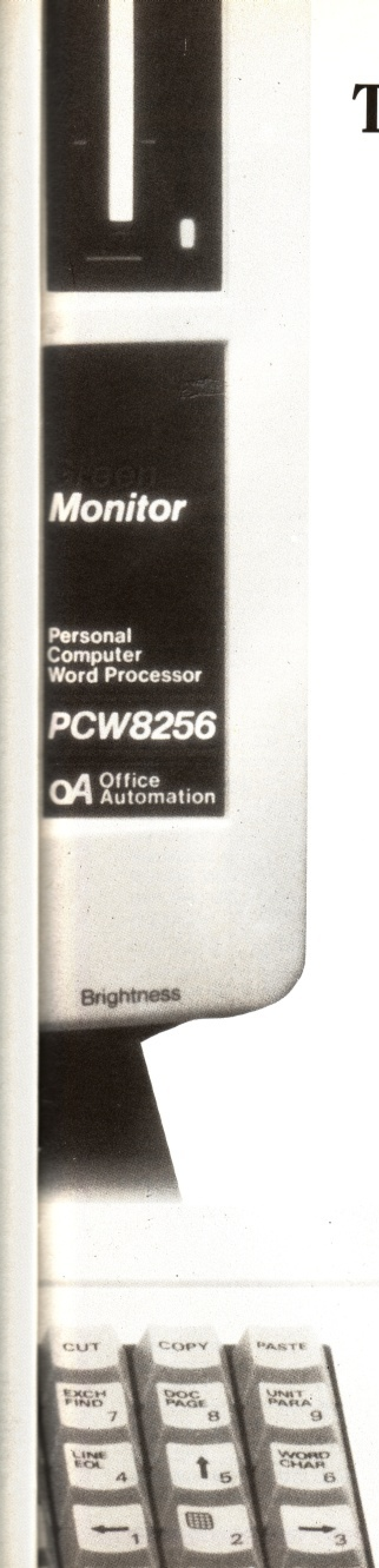
You should also closely examine the number of transactions processed in each ledger – sales, purchase, nominal or payroll – to decide if the expense is actually justified for your type of business. The nature of the business itself will also determine whether it is worthwhile.

Since this is very much a matter for individual assessment we can only offer broad guidelines, but, for example, if your business sells high-cost products with only a handful of sales during the year, then obviously you really don't need a sales ledger module.

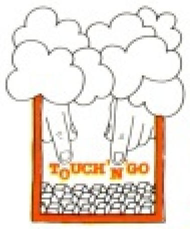
On the other hand, a company which buys and sells on credit and cash, employs 50 people, sells 10,000 units a year and has 50 suppliers would benefit substantially from computerisation. As to the nature of the business, a market trader who operates one day a week selling a small number of lines, with a turnover of less than £10,000 a year, might not get all that much benefit from a computer.

It's very much horses for courses, but as a broad rule of thumb, if you already have a good manual system that produces accurate and comprehensive figures (and your accountant agrees with this!) and if you can produce such reports by hand as quickly as could be done by computer, and if you can do so at any time, with the minimum of disruption, then you will not benefit from adding a computer. (By the way, can we borrow your bookkeeper for a year or two?)

● ***That's a lot of ifs and, as often as not, the balance falls in favour of the computer. So next month we will move on to the question of what the machine is actually going to do.*** ABC



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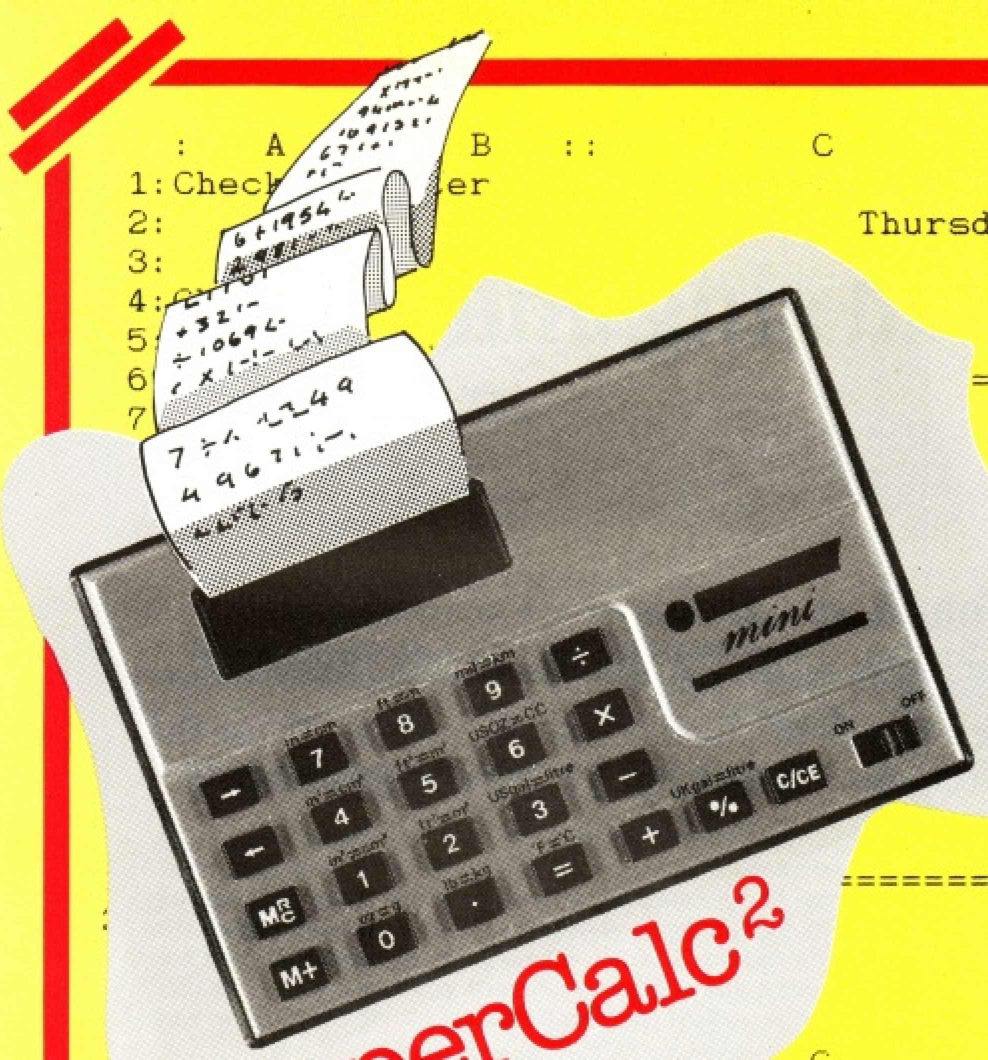
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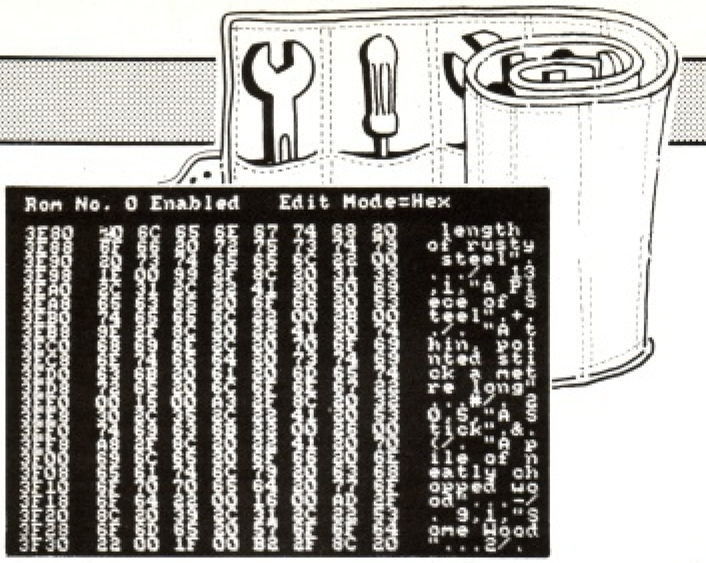
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No Amstrad should be without one!

Pete Freebreg finds that it pays to be lazy

One thing indelibly printed on my personal memory banks comes from when I was at school. We had a cheerful Welsh mathematics teacher whom we called Taffy – of course – and one of his favourite sayings was ". . . the best mathematicians are lazy". The inference was that we should not slog away with pages of figures when a little thought would present us with a short, elegant solution.

What has this to do with toolkits? Well, I often write fairly long programs and any aid that can help me concentrate on the program and free me from a lot of tedious key pushing is a must. This is the idea behind a toolkit – it supplies a suite of short, elegant utility routines that you wish the computer manufacturer had supplied in the first place. Routines that enable you to be as lazy as possible!

The Beebugsoft Toolkit for the Amstrad (CPC 6128, 664 or 464) comes on cassette, disc or ROM. All three versions have the same routines, the only differences are the cost (£14.95, £17.95 and £29.95) and the fact that the cassette and disc versions take up some of the computer's memory space.

This last aspect could be a problem if you are writing long programs, so Beebugsoft include two additional programs on the cassette and disc versions. These each contain about half of the routines, so releasing about 4k extra memory for your programming. Knowing what you want to do, you can load the appropriate set of utilities before loading in your own program.

Although the ROM version is by far the most convenient, it will not plug directly into the Amstrad. You will need to buy an external ROM socket attachment – which will push the price up. Once Toolkit has been initialised in ROM or loaded from cassette or disc, the computer may be used quite normally and the routines called as needed.

Each is accessed by a bar command as and when required. |HELP will list all 30 bar commands together with an indication of what parameters have to be specified for each command.

|TOOLS displays a menu from which most of the routines may be called by just pressing a single key (A-X). |TOOLS also assigns often used commands to the numeric keypad (MODE 1, MODE 2, |HELP, |FREE, |TOOLS and so on.)

All toolkit routines may be called as a bar command either directly or from within a program. Most will be used in the direct mode either as programming aids or as tools to make debugging much easier. Bar commands on the CPC464 cannot accept any text within quotes (file names or search strings). The use of |TOOLS overcomes this problem and is also very easy to use, as you are prompted for all information on any parameters required.

Focus on ease

The whole idea of a toolkit is to make writing and debugging programs easier for the programmer. One of the first routines that obviously fulfils this intention is |KON. This allows the entry of many Basic keywords in a very abbreviated form. The form used is quite logical and is therefore easily remembered, for example: L.100 for LIST 100, N. for NEXT, E.200 for EDIT 200 and LO. for LOAD. Note that with abbreviated forms you do not have to enter a space after the keyword.

Later listings of the program do not appear in this form because Toolkit converts all these abbreviations into the normal Amstrad Basic format automatically. |KOFF switches this routine off if you want to revert to the old laborious method of typing everything in full.

Often you will wish to use a similar routine several times within a program. The normal approach here is to use the routine as a subroutine accessed by a GOSUB. Sometimes this is not possible as even though the structure of the routine is very similar, you may have to alter certain parameters within it.

LCOPY can save time by copying a specified set of Basic lines to a new position. You can then make any needed alterations to the new set of lines rather than having to type them in all over again.

|LMOVE will perform a similar operation but will move a specified block of lines to another specified position within the program. At first sight these two routines seem extremely powerful and very useful but sadly there is another consideration – the routines also renumber the program to keep everything neat and tidy.

This sounds good but it is quite diabolical! If you are writing any program you will have assigned your line numbers in some form of logical order. Perhaps starting all the key operations at lines 1000, 2000, 3000 and so on. After using either of the two commands |LCOPY or |LMOVE you will find the program completely renumbered and your carefully chosen line numbers have been changed.

While on the subject, you will no doubt have cursed the Amstrad command RENUM for a similar thoughtless operation. Toolkit has an improved renumberer – |RENUM – that allows renumbering just a specified block of lines and not also all the following lines.

Toolkit does have the means to overcome the faults of |LCOPY and |LMOVE in the guise of |PARTSAVE. This routine allows the saving – to disc or tape – of a specified block of lines. Having done this, you could then renumber your routine as required and then use the normal MERGE command to insert the routine back in your main program.

Additional programming aids are there in the shape of |KEY and |KEYDEF. The former will list the commands assigned to the function keys which are displayed on the screen and may be edited in the normal Amstrad manner to suit your requirements. But remember that |TOOLS will reassign these keys!

|KEYDEF lists what codes any group of keys have been set to. This display is also given in a form that may be edited and gives information on key number, auto repeat, Ascii code, Ascii code with Shift and Ascii code with Ctrl. An asterisk by any display indicates a definition that has been changed from the default setting.

Lost and found

Two routines that are extremely useful in both writing and debugging programs are :SEARCH and |REPLACE. If you are in the middle of writing a long program and want to use an additional variable – what do you use? Ideally you have made a note of all variables and should have no problem. Sadly we all forget to do this sometimes and confusion sets in, especially if we come back to a program after a rest period of a few days or weeks.

|:SEARCH will readily check through a program in memory and list all lines with the specified variable, keyword, or number. If for any reason you do not want to search the entire program, you may specify a block of lines. It will find anything you have entered in your programs with equal ease and together with |REPLACE recognises ? and * as wild cards. If you search for A?$, it will find AB$, AC$, AD$ and so on. Search for CO* and it will find words like SCORE and COPPER. As it will look for exactly what you type in, check that you type in the correct case – searching for COPPER will not find Copper.

Should you wish to replace a variable, number or string with another, then | :REPLACE is very powerful and easy to use. In fact |REPLACE is quite the most versatile routine of this type I have ever seen in a toolkit. You may find and replace, either globally or selectively. Global will change every occurrence of the specified string. Selective will list the line and seek confirmation before proceeding.

This selective option is very sensible on occasions. Change 960 to 970 (there is no need to specify GOSUB 960) and you may well find that 9600 becomes 9700. The routine is also intelligent enough to know that changing IN to OUT should not result in the keyword PRINT being changed to PROUTT.

Toolkit will also find the variables you have used in another way – |XREF. Calling this routine will display a remarkable amount of information about selected groups of variables. Many toolkits will only display variables after the program has been run and the variables have been assigned a value or string.

Not so |XREF, you need only LOAD a program, for all the numeric and string variables, arrays, functions and GOSUBs or any mixture thereof, to be displayed together with the line numbers where they occur to the screen or printer. Once the program has been run, |REF will also display what each variable contains (numeric or string), including each element of all arrays.

Another excellent debugging tool is the trace facility |TRON. This is a far superior version to the Amstrad's normal TRON function. It may be called to operate over a limited number of lines and program operation may be slowed down by holding down Shift or temporarily halted by pressing the spacebar.

What makes it so much more acceptable than the Amstrad's TRON, is that line numbers are displayed in one small window and not scattered all over the screen. You may even define the position of the window so that it does not clash with your program's display.

Kwick print

Toolkit has a couple of useful routines to enable you to get hard copies from your programs more easily. To get an output to a printer from an operating program, the Amstrad requires special PRINT commands to be written into the program. |PRON will allow all outputs to go to both screen and printer. As all Toolkit routines are usable from within a program, a very simple Basic subroutine can be included to ask the user whether hard copies are required.

The second printer routine is |DUMPA (or DUMPE) and will produce a screen dump to either the Amstrad DMP1 or an Epson type printer. The dump will work in any screen mode and represents up to 16 ink colours by using different types of shading.

Memory lane

Delving into a computer's memory can be a hacker's delight, but it can also teach you a fair bit about the computer and how Basic programs are stored and operate. |EMEM will display the contents of the memory and allow you to edit what you find there. These contents are displayed in a standard format showing the Hex address, the Ascii contents of that address and any printable character represented by that Ascii code.

|BMOVE allows you to move a Basic program to a different place within memory. It also alters the start address so that the computer knows where to find and action the program. |START will specify the starting address for a Basic program.

These two commands seem to have little real use other than to allow two or more programs to be stored in memory and operation to be switched between them. There would be difficulties in passing any variables between different programs and you will have to keep your wits about you as you compile this multiple program.

There are better utilities available to access, write to and manipulate the Amstrad's memory but the routines within Toolkit are as good a place to start as any – especially when you consider all the other useful commands it includes.

Finally in this section there is |PMEM, which will print a block of memory in the form described under :EMEM to your printer. Again this can be instructive, allowing you to examine various machine code programs at your leisure.

Odds

Have you got a program that is getting so large you wonder if you can get it all into the memory? Then consider |PACK. This is a very powerful command that will compact a Basic program in several different ways. Any or all of the following can be implemented – remove all REMs, remove all unwanted spaces, replace all variable names with ones of the shortest possible length and finally rewrite groups of Basic lines as single multistatement lines – whew!

The routine is intelligent, so if you have inadvertently got a GOTO that directs the program to a REM, it will not remove that REM. As the routine works, the display is continuously updated with the number of bytes being saved. You may hardly recognise your program after it has had the whole treatment and quite amazing savings can be made.

|FORMAT gives you an easy to use disc formatting routine that offers the option of system, data or IBM formats. |LIST enables you to list another program directly from cassette or disc without affecting any program in the Amstrad's memory.

|FREE displays information concerning any program in memory – start and end addresses, size, HIMEM, free memory and so on. |ROM lists details of any ROMs present and |RSX lists any system extensions – these are any bar commands resident in RAM – for instance all the Toolkit commands.

Beebugsoft is always considering improvements to its utilities and Toolkit is no exception. Latest versions will have an added command |FAST that increases the speed of screen handling. This means all your program listings, the memory displays for |EMEM and most other screen displays will be noticeably speeded up. The company has even taken note of my criticisms regarding |LCOPY and |LMOVE so if you have a valid comment, let me know.

Conclusion

If you write your own programs and have not got a toolkit, you just do not know what you are missing. The Beebugsoft Toolkit for the Amstrad should definitely be on your shopping list – no computer should be without one.

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SPIKY HAROLD



I actually preferred the French name, Henri Lapointe, but I guess Spiky Harold is more descriptive of a game in which the character you control is a hedgehog. Not just any old hedgehog, mind you – he is without doubt quite the cutest little chap you'll probably ever have the opportunity to control with your joystick or keyboard.

The first surprise comes before the tape has fully loaded. A feature that will be new to anyone who hasn't bought a recent Firebird game such as Rasputin is that music is played while the majority of the game is loading. The music is An English County Garden and is probably the best on an Amstrad yet. It's played in full three-part harmony with an almost piano-like envelope. This music alone would probably justify the price tag but the best has yet to come.

Once loaded there are just two options – you can either redefine the keyboard keys or start the game. While you make your mind up that Rimsky Korsakov classic – The Flight of the Bumble Bee buzzes away in the background. Perhaps not as good as the loading tune but still a pretty recognisable rendition.

Once you start you find yourself in control of the original Harold "cute as apple pie" Hedgehog. He can be moved left and right or he can be persuaded to jump. Whether jumping is an attribute available for all hedgehogs is questionable, but who cares if it helps Harold get through the 57 screens where he will find various food objects that must be collected to help him through hibernation. The sharp frost that is due in 24 hours imposes a time limit on the game but it is more likely that you will have all your 20 lives knocked off before then. There are extra lives to be found and even glasses of wine to make Harold a little tipsy so that control becomes a little erratic.

Everything isn't exactly sweetness and light at the bottom of the garden, though. There are some pretty mean insects, worms, ghosts (?), clouds and probably anything else you care to mention.

Some of the screens are fiendishly tricky and require many "lives" of practice before you finally work out the best way through to the food item and final exit.

The game uses the same four colours in Mode 1 throughout to quite good effect. However all the sprites are drawn in the same colour – partly made up for by their animation. In particular the gobbling mouth of Harold when he finds an item of food is a real gem.

Author: Firebird
Price: £1.99

Colin

There are many games that aren't even half as good as this which are being sold for the full price of £7 or £8. You would have to be some kind of nutcase not to buy a copy of this game if only to enjoy the loading music or the joys of Harold gobbling an item of food.

Sure, I suppose it is really just a platform and ladders sort of a game but it has to be one of the best examples of the genre. I'm amazed that the authors have managed to create such a cute looking central character in such a relatively small sprite and just one colour but even people who thought Thing on a Spring had an amiable little man could be surprised. The humour of the other sprites is also very good and I remain amazed that you are getting so much value for two quid.

18/20

Liz

Hedgehogs used to be the flat things you find on motorways – annoying and flea ridden. Meeting Harold has changed my mind, he is a cutie. The music is brilliant and the animation excellent. It is tempting to say that this should be a full price game but I don't think it would quite be good enough for that. One complaint is that the tunnels are not quite big enough for the sprite, or perhaps that should be that the sprite is too big for the tunnels. This is a real Amstrad program – the graphics don't show any sign of being quickly converted from the Spectrum. I like it.

18/20

Nigel

This game is worth £1.99 just for the loading music. When it comes round to January and we're all looking back at what's been happening during the year, we can reflect on the trend that started in 1986. This is where budget software becomes good software.

Spiky Harold is a good example of this trend. It is well programmed and has a professional quality and playability about it. When budget software was new, the games were not much better than magazine listings but now games like this threaten the more expensive titles in quality of programming. Here the animation is better than most Ocean games and the screens are well thought out and prettily designed.

It is not the sort of game I would sit and play for a long time 'cos you only need half a brain cell to play it, but as a wander-round-the-screens-getting objects game, it scores quite highly.

16/20

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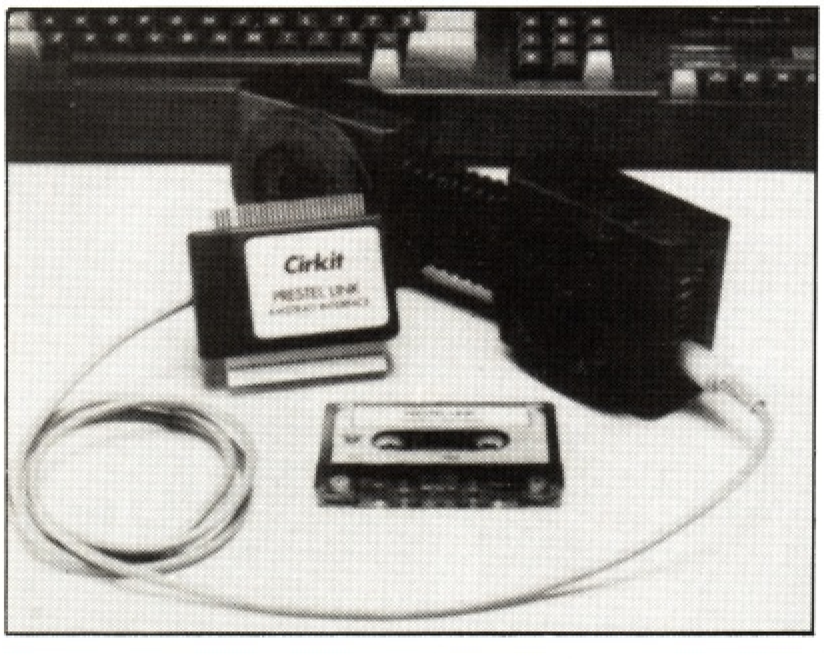
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Access

SAI COMBAT



Originally, Sai Combat was the sensible way to use your body and weapon as one in defence. Through the ages it was stylised and became more of an art form and method of Zen contemplation. Now these contemptible barbarians have the impudence to take this ancient and noble art, only to put it on a despicable Korean-manufactured heap of . . . sorry about that, but the game gets to you after a while.

This looks remarkably like the Commode 64 version of Kung Fu. The characters involved in combat are very large sprites, moving rapidly and gracefully across the screen. Sai is not usually limited to any particular weapon, but in this case the Japanese quarterstaff or bo has been chosen. The combatants swing them about in circles and an agressive manner when not really doing anything else particularly violent. Unless, that is, you happen to count approaching someone while swinging a quarterstaff as violent.

One or two players can take part in the ancient art of trying to take someone's eye out with a blunt stick or a kick in the head, or fighting your way through the nth Dan, fluorescent orange belt and so on under the watchful eyes of two wizened Sai masters. Apparently they ignore the small amount of shuriken or fighting stars that get thrown about –but not by you – in the higher levels.



The only problem I found – apart from not being able to get past grey belt – was that any strike that went off one side magically appeared on the other, but I think we can forgive them that.

Either player can use keyboard or joystick to inflict perfectly harmless GBH on each other, or get creamed by the computer. The amount of oomph you have remaining is shown as two dragons' heads. One is clearly very ill (yours), and goes green rapidly. The other (the computer's in the solo game), seems to have high blood pressure and slowly turns red.

After being kicked in the neck for the last time in that round, you can gamble a bit and go to the last level, but with only three falls left. Saves a bit of glief velly occasionary.

Author: Mirrorsoft
Price: £8.95 tape, £13.95 disc

Colin

I'm not normally a fan of this sort of game, but this one is as good as the Exploding Fist, if not better. Music and sound effects, together with the changing scenery, help hold interest when your spirits and energy levels are low. It is very easy to build up a graceful and effective routine of attack. Knowing that certain hits cause the other guy to back off a bit, you strike close, then further away.

Velly leckomended for a bruddy good punch-up.

18/20

Liz

Just as I was starting to get bored with combat games, Mirrorsoft produces the most playable one yet and fires up my enthusiasm. Sai Combat may not have the pretty backgrounds of Way of the Tiger but it is better than all the predecessors. The sprites move smoothly and accurately, so much so that it almost hurts when the computer pokes you with his bo.

There are odd problems with the sprites not being sure who should be in front but that may be finger trouble on my part and doesn't affect the gameplay.

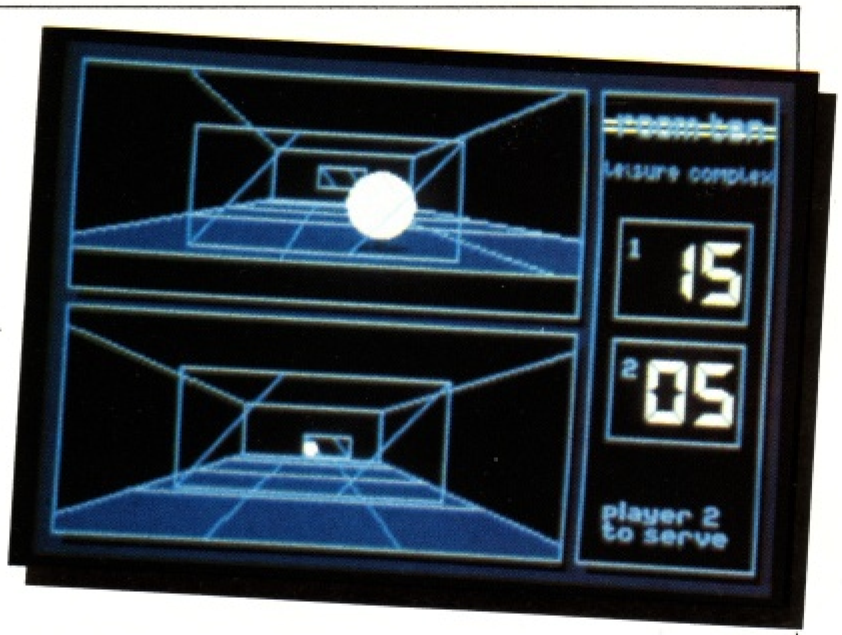
15/20

Nigel

Sai Combat is Exploding Fist with a stick. It takes a while to pick up all the moves that can be made, like all these martial art games, but once mastered the game really takes off. The sound effects in the game are very good with a realist squish when your stick makes contact with your opponent's eyeball. (I think I'm gonna be sick.) One of the best features of the game is the ranking system where defeating your opponent at one level promotes you to the next. Being defeated by your opponent brings you down a level. I think this is the best combat game of this genre that I've seen and you should all go out and buy it.

16/20

ROOM 10



What is the hoariest old chestnut of an idea you can think of for a game? Space Invaders? Breakout? Pong? Promise you won't stop reading this when I tell you what sort of game this is? Cross your joystick and swear on your infinite life? Okay, it's a version of Pong.

What, still with us? Good. Room 10 is the latest CRL game and is a follow up to Tau Ceti, the shoot-em-up planet exploration game. Obviously Pete Cooke, programmer of Tau Ceti, wanted to do something a little different this time but still keep the theme going. So he's turned his Pong game into a recreational activity for Galcorp space pilots to play after a hard day zapping droids.

It's quite simple to explain. Room 10 is where it all takes place. The game is essentially 3D Pong, and each player has a bat with which they must return a ball. The ball can bounce off the side walls, ceiling and floor, but if it reaches the end wall behind a player, the player concedes five points. The first player to reach 35 points wins.

When playing the game, there are two views of the court shown. The top half of the screen shows player one's view of the court, while the bottom half shows player two's. The bats are very large, being about a quarter of the area of the rear wall. Your view is looking through your own bat at the action taking place. The bats and the room are shown in wire frame graphics with the ball and floor being solid.

As you move the bat with a joystick, or the keyboard, you will notice that the bat has inertia. Well of course, because the game takes place in zero gravity and your bat colliding with the wall makes a crashing sound.

You can select whether to play against a human or computer opponent. Against a computer opponent there are three levels of difficulty. The game can be played at several speeds although there seems very little difference between them. The computer opponent is quite cunning and at medium and high skill levels is tricky to beat. The closer the ball hits the edge of the bat, the more acute the angle the ball travels away. The computer opponent, given a simple return, will always line up an edge to make the ball bounce back off the walls and ceiling. Floor to ceiling is a short distance for the ball to travel, so getting an angle to bounce the ball off the floor makes it a difficult shot to return.

There are many options in the game. I have mentioned changing the speed and skill levels but it is also possible to select whether to be player one or two and whether player one or two is a human player or the computer. This seems a bit confusing but it means you can set the game up and play against one of your friends or sit back and watch the computer play itself. The keys are fully redefinable but initially the joystick is not set up.

Author: CRL
Price: £7.95

Colin

When I first saw the name Room 10, I imagined it would be a game involving a large maze and lots of rooms. Wrong again. However the idea of a hi-tech 3D ping-pong game is certainly a novel one and is quite a step up from the very first arcade game Pong. The game looks as though a great deal of effort has been afforded in every detail and plays very well.

My only gripe is that the amount of deflection imparted to the ball when it is hit nearer the edge of the bat should have been greater. Some rallies can go on for quite a while before a mistake is made.

The provision of faster levels does make up for this, though, and so I wouldn't hesitate to recommend the game, particularly if you can find another person to play against.

17/20

Liz

If you have ever wondered what life is like for a table tennis bat then Room 10 is the place to be. The bat control is a little sluggish but some rallies still get the blood pressure up. The roof and walls make Room 10 look like real tennis or a sort of cross between squash and tennis. If you play against several other players and swap from the top to bottom you can easily lose track of which part of the screen you are supposed to be looking at.

With its roots so firmly in the past of computer games Room 10 is surprisingly up to date.

17/20

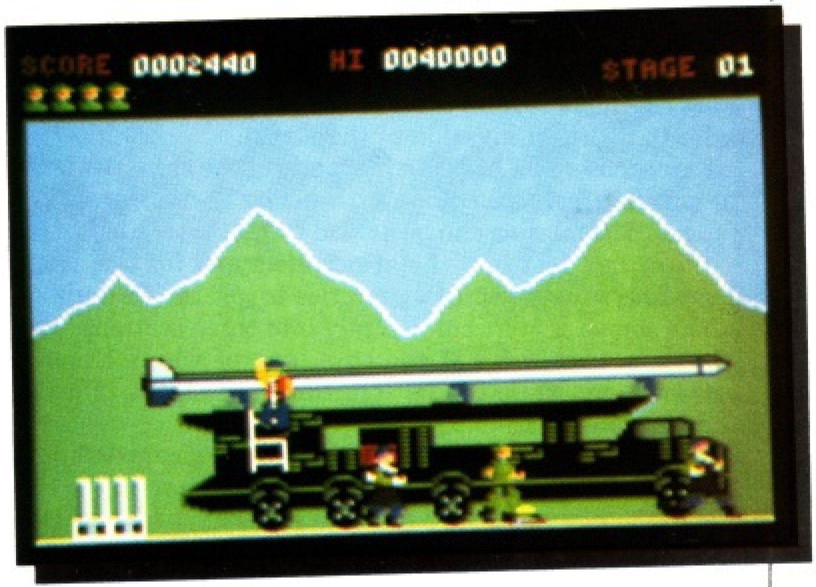
Nigel

It's nice to see an old idea reworked into an up-to-date game. Room 10 is very playable. The 3D effect is very nearly state of the art giving the old Telly Tennis idea new life. The sound effects are a bit dull though and after a while the game begins to pall. There are lots of options, but unfortunately none have much effect on the game. I would have liked something to liven it up a little when playing the computer.

Room 10 is great for two players and has much scope for mini tournaments when you've got a crowd round.

15/20

GREEN BERET





After Who Dares Wins II, Commando and Rambo another of the arcade warfare games makes the transition to the small screen. Unlike the others this one gives a rather more 2D view of the action and your task is to move to the right rather than up the screen. However the overall concept is quite similar – you are the sole representative pitted against unthinkable odds whose task is to kill as many of the opposition as get in your way while trying to get as far as possible in order to release captured allies.

You start armed only with a knife while some of your opponents have rifles. Contact with any of the heathen masses means instant death, the consequent loss of one of your lives and return to the start of the current section.

In the first part of the game you have to battle across a number of linked bridges. As you reach the right hand edge of the screen the action ceases temporarily while the screen is scrolled to the left bringing the next screen in to view. On each screen there are two levels, periodically linked by ladders. You can sometimes climb or descend these ladders in order to avoid a bullet or one of the other soldiers.

Movement is either by redefinable keyboard option or joystick. Upward movement while not at the base of a ladder causes your man to jump, which again is useful for avoiding death. Downward movement causes your man to lie flat on the ground which can be useful for avoiding a flying drop kick.

There are three types of foe. First are the rather dim greeny/brown clothed soldiers who stick to one level and travel in only one direction. They are quite easily avoided if you are not being chased and points can be gained by stopping for a second and using the fire button to thrust your knife into them. It is not absolutely necessary to stop, but it does make the timing of your thrust easier to judge. This first type of baddy look a bit like rather fat landlords from a German bierkeller and it is difficult to take them as a serious threat.

The orange/blue outfitted soldiers look a lot more serious and they are certainly a greater threat. Not only do they carry rifles and periodically stop to shoot a bullet at you, but they will also turn to follow you and will even go up and down ladders after you. The third soldier you see early on is the Commandant who looks more like a plumber in blue overalls, but it is as well that you can spot him. Killing him gives you one of the heavier weapons (initially a flame thrower) which comes in handy at the end of a stage when things get hectic.

Once past the bridges, the background changes to missile carrying trucks and this is followed by ICBMs on their launchpad. It's any one's guess what comes after this, though I'm sure people are bound to find out.

Author: Imagine Software
Price: £8.95 tape, £14.95 disc

Colin

I thought Who Dares Wins II was quite a good battle game but I think this one might just have the edge. The gameplay isn't identical but anyone who loves killing anything that moves is going to like this.

The outfits of the opposing soldiers sometimes look quite comical but I love the drop kicking Cossacks at the end of the bridge section.

As always, I think the game might have looked better in the higher resolution Mode 1 but good use is made of the colours in Mode 0. The sound was nothing to write home about but I can't say I'm ever that bothered about it anyway.

The game is certainly very addictive and although I haven't got too far yet I still keep going back to see if I can get a little further. I think I'll have to find an infinite lives poke before too long.

17/20

Liz

I think that taking on an infinite number of soldiers armed only with a flame thrower is a lot of fun. You can fire a ball of flame and then follow it so that lots of men get killed. Not a game for the squeamish.

16/20

Nigel

This game has the manic quality of a real arcade machine. The constant action requires enormous concentration and fast reflexes. I think it's all too much for me. I just can't get anywhere.

15/20



V

V is a new game from Ocean loosely based on the popular TV series. The idea is that you play the part of Donovan and you must complete several tasks on board the alien mothership in order to avert an invasion of the Earth.

Explosives must be set in key parts of the ship – water inlet, air purifier, central computer, nuclear reactor and docking hangar. The mission can be helped by getting the lethal (to the reptiles) red dust into the atmosphere and for this Donovan must first visit several laboratories to get the formula.

The screen is split horizontally into three sections. The top two show two levels of the ship, one of which Donovan is currently on, while the bottom third has status information and the control panel.

Joystick or keyboard are used to move Donovan left or right. Upwards movement causes him to forwards roll in the current direction unless he is standing on a red beam pad in which case he will go up a level. If he is in front of a lateral door then he is taken to the next plane of the ship. In a laboratory the same movement picks up a piece of the red dust formula while in an arms dump it will rearm his laser. Downwards movement has several effects. At a lateral door it takes him back one plane. On a red beam pad it takes him down a level and if pressed with fire it allows the communiputer to be used.

The communiputer is a multipurpose device whose chief function is to locate the important parts of the ship.

On reaching a security door, Donovan activates the communiputer and it is then possible to arrange a code to match the correct one shown above. Working from the right it is first necessary to identify the next code symbol in the correct code. This same symbol must then be identified in the lower code. The cursor is moved beneath it and the fire button pushed so that it is switched with the symbol at the left hand end. The cursor is then moved beneath the position where this code will go and fire is pushed again. Working along the code in this way it soon becomes a simple matter to quickly get through a security door.

The huge game map is divided into an X, Y grid in which the X position is given by the current sector number (increasing to the right) and the Y position by the level number (increasing downwards). A third dimension, the current plane, also exists. Travel between planes can only be made by means of a lateral door. In each of the five planes there is a laboratory and it is only when they have all been visited that the red dust formula can be fully deduced.

There are yellow surveillance robots that report your position to the other robots, green maintenance robots and the kamikaze security robots that come straight for you. You have a laser to defend yourself but it runs out quite quickly. Each time you come into contact with a robot, the static charge it carries increases your heart rate until it becomes lethal. A period of rest allows it to return to normal rate.

Author: Ocean
Price: £8.95 tape, £14.95 disc

Nigel

As probably the world's greatest fan of V, the TV series, I awaited the computer game with great interest. Unfortunately my initial reaction was a little disappointing. Some of the truly magic touches of the TV series, like the cardboard dialogue and outrageous happenings were missing.

However if you try to ignore the tie-in and just look at the game on its own merits then perhaps it isn't too bad. Certainly the map size (I would guess at least 5 × 25 × 25) is pretty good and should keep map makers busy for ages.

Robots following you don't always appear to be consistent though this does mean that you can avoid them by out running them. While I remain disappointed that there isn't a great crunching sound effect as you bite the head off a white rat I think the game is still worth a look.

0/20

Liz

V, the television programme, was so dreadful it was brilliant. V the computer program is so dreadful it is boring. Running around the spaceship is a bit like being lost in the London underground, and the communiputer is about as much use as one of those maps with lights at the big underground stations. Donovan jumps and tumbles to avoid the robots but seems to lose weight in mid-air. Opening the combination locks is frustrating before you know how to do it and tedious after. The TV show was so full of spaceships, street fighting, espionage and general excitement that it is hard to see how Ocean mucked this one up.

9/20

Colin

I was a huge fan of the series – I never missed an episode – and was really looking forward to the game.

What do we get? Dross! What a load of old rubbish. Plant the bombs in the visitors' spaceship. Find the red dust. How many lizards in this game? None. How many little furry animals get eaten? None. How many lasers get fired? None – I don't call Donovan's pathetic gun a real laser.

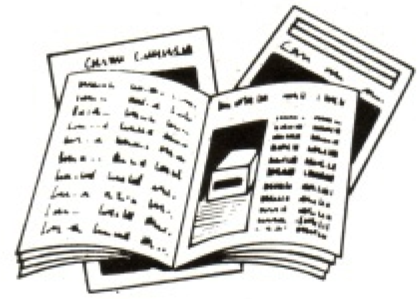
How many robots did you see in the series? None. How many points out of 2,000 do I give this game? None. Why don't Ocean throw this in the bin and write something resembling the series.

14/20

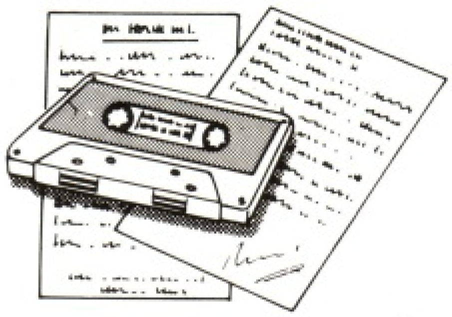
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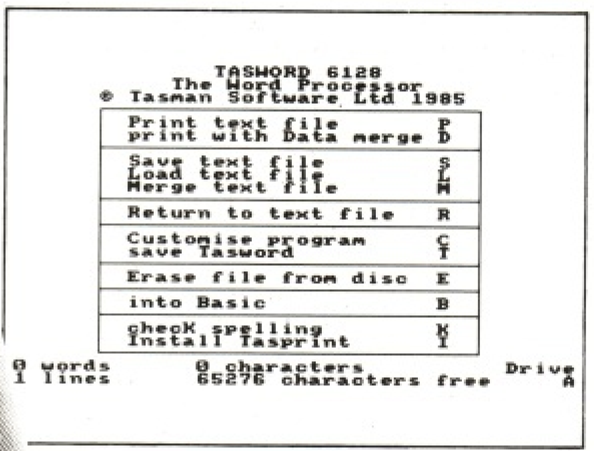
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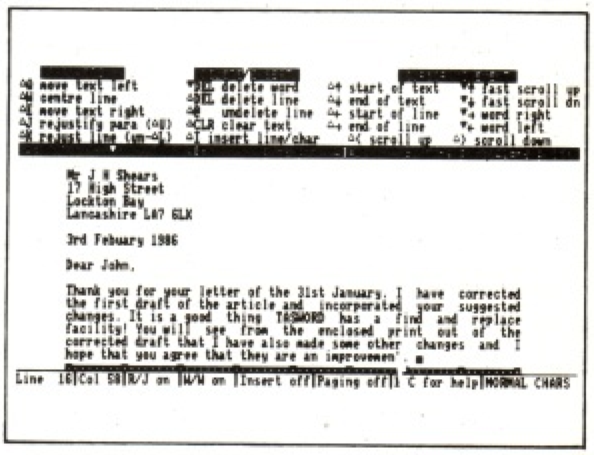
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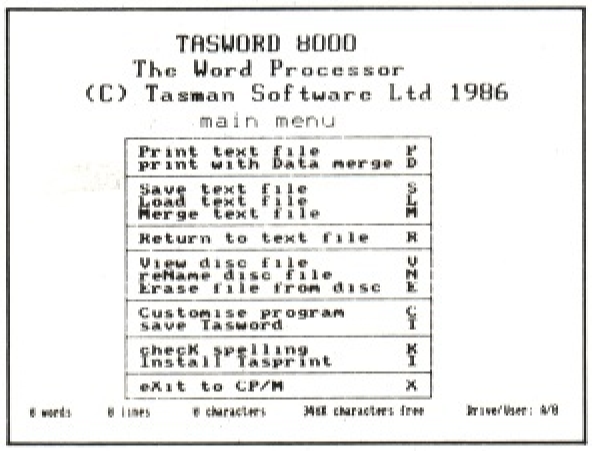
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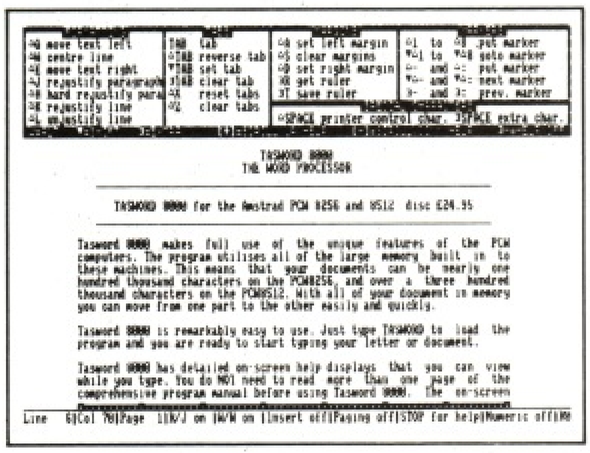
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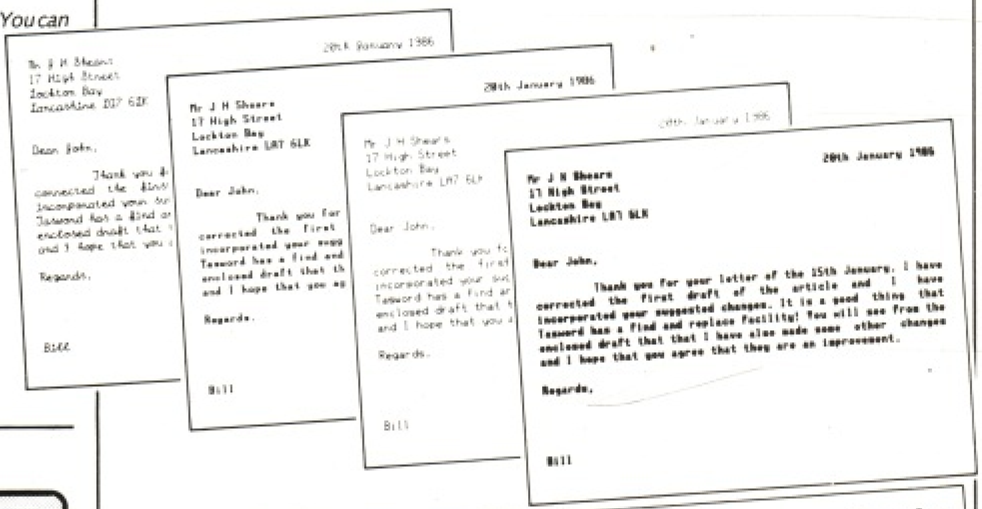
The Check Spelling option shown on the screen picture above requires the program TAS-SPELL 8000 which will be available in the Autumn of 1986. TASWORD 8000 will load Locoscript and other standard ASCII files and will also drive all other printers in addition to the PCW printer.

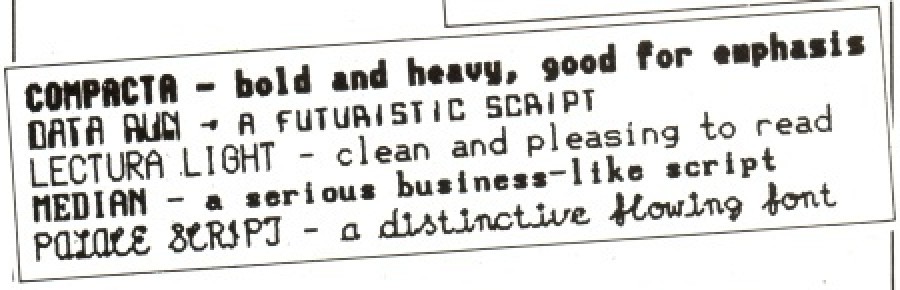
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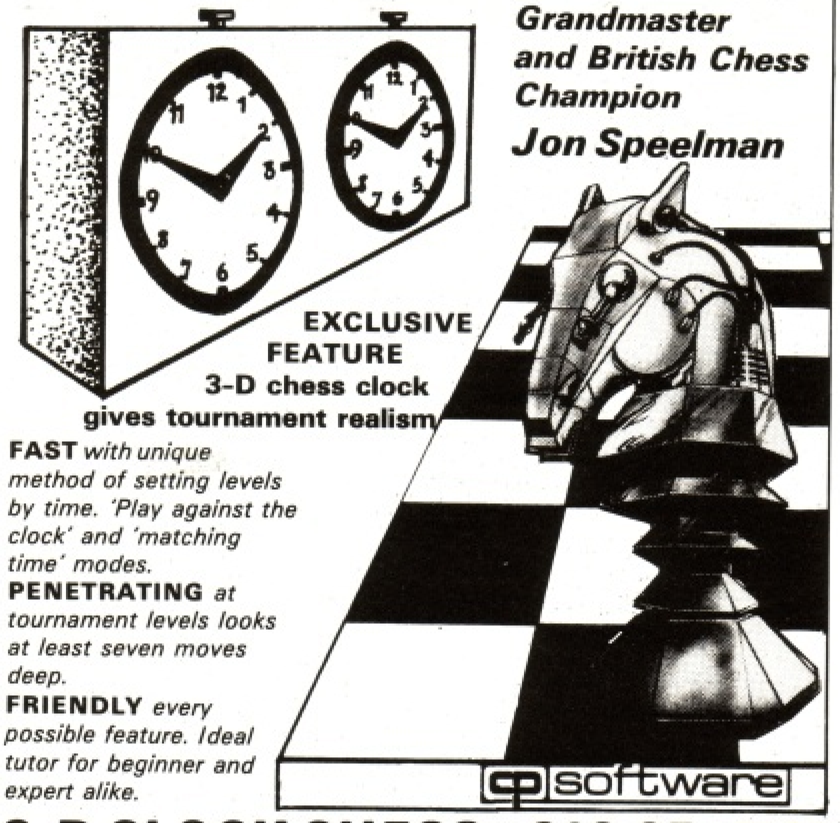
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SHOGUN



Shogun is a novel by James Clavell telling the story of 17th century mariner John Blackthorne. Blackthorne is shipwrecked off the coast of Japan and finds himself in the middle of a local power struggle. The conflict is between Lord Toranaga on one side and Lord Ishido on the other, both trying to gain the position of supreme military commander, Shogun. Blackthorne is threatened not only by the whims of his captors but by the presence of the Spanish clergy who are busy exporting the 17th century equivalent of transistor radios and motorbikes.

The game, written by Virgin's Gang of Five, steers a course away from the main stream of the book. The object is for you to become Shogun. The default is that you take on the role of Blackthorne although it is possible to select a peasant or samurai character to play. The game is not so much arcade adventure like Sorcery – also by Virgin – but more an arcade strategy game. There are lots of screens as there are in Sorcery, and a character to move around, but there is more to do than moving and zapping.

You start by selecting your character and then appearing on the beach. The screens are very similar in appearance to Sorcery screens although not as nicely designed. At this point you are likely to meet the first character in the game. You can either choose to smile or attack him or her. This is done by first pressing the spacebar to select an icon. The joystick is then used to move a cursor to the required icon. Pointing at the smiling sun and pressing fire selects smile mode. Now you can shoot smiling suns at the character to befriend him. If this appears to have no effect then select the knife icon and you will go into attack mode. Unless the character is exceptionally good at fighting or not a peasant or servant, you should win the fight. At this point he becomes a follower and you can order him around. The idea of the game is to gain 20 followers before seeking an audience with the Emperor.

Ordering someone is done by selecting the exclamation mark in a speech bubble and pointing a cursor at the character you want to command. If the character is a follower you may order him to either assassinate one of the other characters, get an object, or protect a character or guard an object. There are several objects dotted around the game like swords, shields, helmets, money and food. Money can be accumulated and spent on bribes. Food is picked up and eaten to replace strength lost in fights and movement. The other objects can be given to other characters to gain their loyalty.

Among the other icons that can be used are functions for examining characters and objects, pausing the game, saving a position, giving away an object, and surrendering in a fight.

Initially you will spend your time exploring the many screens in Shogun. I counted more than 100 so it's quite a big game.

Author: Virgin Games
Price: £9.95

Colin

If you ignore the bad bits of Shogun there is quite a good game lurking underneath. I like this type of icon-driven game but they do take a lot of getting into.

There seems to be a strong moral aspect to this game with smiling and giving gifts to win people over. Of course, if that fails you cut 'em up a bit. I have to admit that I didn't spend a great deal of time playing the game as I found the jerky movement put me off.

14/20

Liz

The first thing to realise is that Shogun is a strategy game. This is a brilliant way of presenting a strategy game but it is a two-edged sword. Zapp 'em merchants are likely to buy it and be disappointed while the brainy types who would enjoy the program will give it a miss once they see that it is full of sprites. This is where the book tie-in may come in handy. If people buy the game because they liked the book then they will be the type to get hooked by the game.

I'm sure that if I had a little more patience then I would be much more enthusiastic but, as with Lords of Midnight, it was too much work to get started. OK, so I'm lazy.

13/20

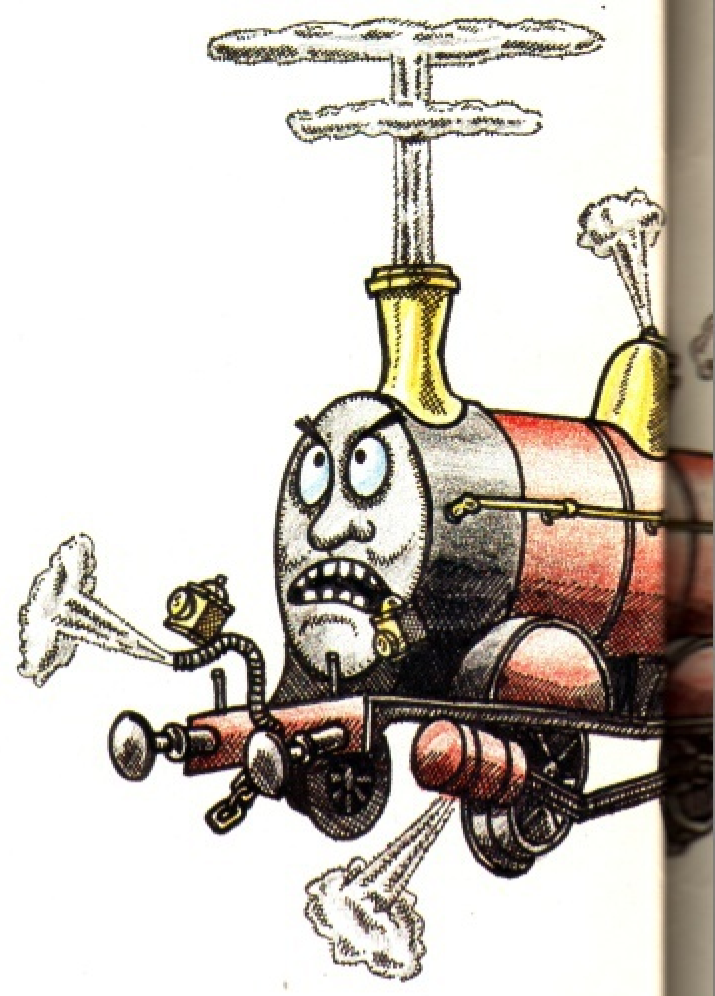
Nigel

Sorcery fans beware! Shogun is quite good in its own way but it isn't Sorcery II. Gone is the smooth animation and nice effects to be replaced by icons and jerky flickering sprites. There are dozens of screens but a lot of them are naff. Worse than this the program is full of bugs. Ladies turn into Lords halfway through the game and sprites get duplicated in rivers. Having said that, none of these things stop it being a playable game. I managed 10 followers before I pushed my luck and attacked a samurai. Maybe I should have given him a shield.

14/20

GOING LOCO

Alex Martin thinks about ink switching



First, matters arising from the June Goin' Loco. Quite a lot of the article was devoted to extolling the virtues of using statements like:

```
10 ON INSTR("ZX",UPPER$(INKEY$)) GOTO 20
   ,30
```

But as Paul Davies of Newport, Essex and John Durst of Swerford, Oxon, pointed out, this doesn't work. The reason it doesn't work is because the function Instr will return the value 1 if the string that is being searched for is a null string containing no characters.

As the Inkey$ function returns a null string when no keys are pressed, the program will go to the first line number in the Goto list. The following shows the value returned from the Instr:

```
10 PRINT INSTR("ZX",UPPER$(INKEY$))
20 GOTO 10
```

This will print out a stream of 1s until a key is pressed. If X is pressed, the program will print a 2 and any other key will print a 0. It is interesting to note that pressing Z also produces a 1.

There are two ways of getting round this problem and converting the key press to something useable. The first is to alter the list so that the first entry in it is disabled in some way. The simplest thing to do is send it back to the start of the line:

```
10 ON INSTR("*ZX",UPPER$(INKEY$)) GOTO 1
   0,20,30
20 PRINT "Z pressed":STOP
30 PRINT "X pressed"
```

The asterisk is used because whatever character appears first in the list will always return the same value as a null. If a character is duplicated in the list the first occurrence is the one found by Instr. An asterisk put later in the list will do no good, so effectively you've knocked the poor old asterisk on the head. The second method is to alter the Inkey$ statement to ignore null strings. This is an example of how to do that:

```
10 ON INSTR("ZX",LEFT$(UPPER$(INKEY$)+"*
   "),1) GOTO 20,30
20 PRINT "Z pressed":STOP
30 PRINT "X pressed"
```

In the above program the resulting string, used as the string to search for, is the leftmost character of a two character string created by adding an asterisk to the Inkey$. If the Inkey$ returns a null string then the asterisk becomes the character being searched for in the Instr command.

On to more exciting things

Well, that took quite a bit of tidying up didn't it? In recent months I've been concentrating on characters and data handling – pretty boring stuff to those among you keen to produce the odd game or two. The rest of this month's space will be devoted to ink switching, a technique which enables smooth animated effects to be created by changing the colours of the inks.

Inks, pens and colours on the Amstrad are one of the most easily misunderstood aspects of the computer, which is a good reason for not trying to explain them here. I will, however, relent and give you a brief idea of what they are about.

Forget all the preconceptions *(ideas you've had before – Ed)* that you have about the terms pen and ink, Okay, I know it means something else in Cockney rhyming slang. On the Amstrad, pen refers to the implement with which you are currently writing. This fictitous pen puts on to the screen the ink that the pen is loaded with.

As we all know, real ink is water with pigment in it. Consider the ink that is put on your computer's screen as being equivalent to water. It is transparent and invisible. Only when the ink is pigmented can you see it. There are various commands on the Amstrad which control these functions.

Pig pen

The command PEN is used to select the ink to put into a pen. Only a certain number of inks are permissible depending on the screen mode and these always start from zero and work up. The command PAPER is equivalent to PEN but sets the ink to use for the background. PEN is specific to text (printing characters). There is no command on the 464 to set the graphics equivalent of the text pen but it is possible to set it using the graphics commands.



Red ink

The command INK is used to select the colour an ink displays. There are at least two parameters to an INK command. The first specifies the ink to set and the second the colour, which will be a number from 0 to 26. A third parameter allows a second colour to be specified. This will make an ink alternate between the two colours. The technical term for this is flashing.

There are no limitations on what colours inks can be set to. If you want, you can set all the inks to display red. That would mean, when the program finished, it would print a red Ready on red. Of course you will not be able to see it – or anything else subsequently printed on the screen – unless you set the ink, which the text pen has used, to something else.

South of the border

A useful thing to remember when playing with inks and pens is that the border is completely independent of inks and only understands colours. This means that you can test a colour number at any time without upsetting whatever you have on the screen. The following program cycles through every colour the Amstrad can produce:

```
WHILE -1:WHILE INKEY$="":WEND:BORDER n:n
      =(n+1) MOD 27:WEND
```

The animating ink show

Enough of all that. It's time to take a hard look at switching inks. We'll start off with a short listing.

Here it is:

```
10 ON BREAK GOSUB 150
20 MODE 0
30 FOR n=1 TO 15
40 MOVE 100+(10*n),100
50 DRAWR 0,100,n
60 INK n,0
70 NEXT n
80 :
90 n=n+1:IF n>15 THEN n=1
100 INK n,20
110 WHILE INKEY$="":WEND
120 INK n,0
130 GOTO 90
140 :
150 INK 1,20:STOP
```

The first line is there to help you. When you break out of the program, it goes to line 150 to change INK 1 to something legible after the program has altered it. The next few lines put the micro into 20-column mode and draw 15 vertical lines, one in each ink. Each ink used is then set to black.

The second part of the program loops round adding to the number of the current ink (n). The current ink is then changed to 20 (bright cyan), and a key press is waited for. When the key press comes, the current ink is put back to black (0) and the program starts the loop again. Pressing a key and holding it will produce the animation effect.

The above listing shows how to produce ink switching animation using graphics. To do the same with text, you need to use the command PEN. This is illustrated in this program, similar to the above.

```
10 ON BREAK GOSUB 140
20 MODE 0
30 FOR n=1 TO 15
40 LOCATE n,10:PEN n:PRINT CHR$(143);
50 INK n,0
60 NEXT n
70 :
80 n=n+1:IF n>15 THEN n=1
90 INK n,20
100 WHILE INKEY$="":WEND
110 INK n,0
120 GOTO 80
130 :
140 INK 1,20:PEN 1:STOP
```

You may be unimpressed by these examples – surely the same can be done without complex fiddling with inks? The advantage of doing it this way is that large areas of screen can be altered in colour within a fraction of a second. The last two programs show a little of the scope of ink switching. I'm not going to attempt to explain how they work. The first is a simple demo while the second is the old reaction testing game with a new twist:

```
10 ON BREAK GOSUB 150
20 MODE 0
30 FOR c=1 TO 25*20
40 PEN (c MOD 16)
50 PRINT CHR$(143);
60 NEXT c
70 :
80 n=n+(RND*15)+1
90 IF n>15 THEN n=0
100 INK n,20
110 WHILE INKEY$="":WEND
120 IF (RND*100)>50 THEN INK n,0
130 GOTO 80
140 :
150 PEN 1:INK 1,20:INK 0,0:MODE 2:STOP
```

Radioactive reactions

Here's the game. You are the attendant of a super fusion power cell. The cell has a spinning shield with a gap in it. You must squirt a jet of coolant on to the cell every so often to prevent the cell going critical. If you miss the gap and hit the shield you will damage it making the cell explode.

If you don't cool the cell before the meter reaches max, the cell will explode anyway. Oh, there's just one other thing, whenever the cell is hit by coolant, the foreman increases the output of the cell and the shield spins faster. Yes, I know it's nonsense but it's also a good illustration of ink switching.

```
10 DEFINT a-z:DEFREAL t:INK 0,0:INK 1,23
20 ENT-1,2,20,2:ENV 1,=13,25,=9,4000
30 MODE 0:DEG:a=3:b=2:onn=6:off=0:delay=
   50:x=320:y=30:y1=130
40 FOR n=2 TO 15 :INK n,onn: NEXT
50 WINDOW #1,1,1,1,25:LOCATE 2,23:PRINT"
   _max":GOSUB 320
60 ORIGIN 320,200:PLOT 0,-400,1:TAG:MOVE
   -16,-190:PRINT"";:MOVE -16,0:PRINT"
   #";:TAGOFF
70 :
80 :
90 FOR n=14 TO 372
100 i=n/25.7+1: MOVE SIN(n)*100,COS(n)*1
    00:DRAW SIN(n)*120,COS(n)*120,i
110 NEXT
120 ORIGIN 0,0
130 :
140 :
150 a=a+1:b=b+1:IF a=16 THEN a=2
160 IF b=16 THEN b=2:MOVE 0,hot:DRAWR 10
    ,0,1:hot=hot+2:IF hot=32 THEN 240
170 INK a,off:INK b,onn:t=TIME:WHILE t+d
    elay>TIME:WEND:CALL &BD19
180 IF INKEY$<>"" THEN GOSUB 220
190 SOUND 1,delay,5,7:GOTO 150
200 :
210 :
220 IF a=8 THEN delay=delay-1:MOVE x,y:D
    RAWR 0,y1,1:MOVE x,y:CALL &BD19:DRAW
    R 0,50,0:DRAWR 0,20,8:DRAWR 0,60,0:s
    core=score+1:hot=0:CLS#1:GOSUB 320:R
    ETURN
230 MOVE x,y :DRAWR 0,50,1
240 FOR n=15 TO 2 STEP -1:n=n+(n=a):INK
    n,26,24:NEXT
250 FOR n=50 TO 1 STEP -1:t=TIME:WHILE t
    +30>TIME:SPEED INK 5,n:WEND:SOUND 12
    9,n,20,7,0,1,10:NEXT:SOUND 129,0,100
    ,1,1,0,31
260 IF score>highscore THEN highscore=sc
    ore
270 hot=0:CLS#1:delay=50:score=0:GOSUB 3
    20:MOVE x,y:DRAWR 0,50,0:FOR n=2 TO
    15:INK n,onn:NEXT
280 WHILE INKEY$<>"":WEND:WHILE INKEY$="
    ":WEND
290 GOTO 150
300 :
310 :
320 LOCATE 2,1:PRINT USING "HI ####  SCO
    RE ####";highscore,score:RETURN
```

ACU

Farewell to Amstrad Business Computing...

Good luck – Amstrad Professional Computing!

If you have read the editorial in this month's *ABC* you will know that *Amstrad Business Computing* will no longer be with us. It is off to bookshelves new. To reflect the type of user who will benefit from this new publication the name will be changed to:

AMSTRAD PROFESSIONAL COMPUTING

The new magazine will concentrate on all aspects of computing for the serious user. But we know that the interests of our readers are not limited to business computing. So while *Amstrad Professional Computing – APC* to its friends – will cover a wide range of topics of concern to the serious user, you can be sure that it won't all be non-entertainment articles. There will be the odd games reviews as well as tutorials and the latest news and reviews of new software, peripherals – and, of course, any future Amstrad computers.

AMSTRAD COMPUTER USER

So where does that leave *Amstrad Computer User?* As the official magazine for all Amstrad computers, we will continue to support the whole range of existing Amstrad machines and lead the way with any new ones. There will be something for everyone. Of course we won't be as business orientated as our friends at *APC* but then we won't ignore all the useful things you can do with your computer.

***Amstrad Computer User* will continue all its popular regular features – the Adventure column by Bill Brock, Goin' Loco, Hackers Haunt and others. There will be more programming articles. Colin, Nigel and Liz will give you the lowdown on the latest releases and Least Significant Bit will be as contentious as ever.**



The Mastertronic team hard at work on their ultimate executive toy

'We are the kings of budget'

Mastertronic has conquered the software scene by creating low cost titles. Jerry Muir went to see what goes on at its London HQ.

In just two years Mastertronic has come a long, long way. The company that created the £1 game and then went on to drag itself up from its bargain basement roots, now dominates the charts and boasts sales of well over five million tapes. Not bad in anybody's books.

Tucked away to the east of the City of London, the company's offices house the usual collection of micros. Commodores share desks with Spectrums and, of course, the all important Amstrads, while redundant machines retire under benches.

Not that much programming goes on here, but there's a lot of program evaluation to be done. Mastertronic has no trouble tempting programmers to submit their latest offerings.

This is where the company's day to day business is conducted and it's here that I'm to interview Martin Alper, Alan Sharman and John Maxwell about the phenomenal rise of the company which dared challenge the spiralling price of software.

The room contains the usual office paraphernalia plus a Bally Space Invaders pinball table. This provides invaluable therapy when the going gets tough – the ultimate executive toy. It's surely a sign of Mastertronic's success that a second table is to be ordered.

At the time of our conversation it was just two days before the Mastertronic team packed their bags for a week at the Chicago Consumer Electronics Show. Everyone was busy making last minute arrangements and news had just come through that they had won awards for three of their programs, to add to the two prizes from 1985.

In the midst of the phone calls and the rejoicing I asked Martin Alper, one of the original three directors, how the idea of pocket money software came about.

"We launched in April of 1984 and we go back six months before that. The idea stemmed from a friend who had a duplication plant for data cassettes. We were in discussion with him about the cost of duplicating computer games and we started to do some research into the market and found that what was costing a low price was in fact ending up in the shops at a very high price". That friend now provides Mastertronic's in-house duplication.

"We took a bold marketing decision, that if we were to go strictly for volume we could bring the cost down to a budget

level, although we had no intention of bringing the quality down".

None of the original triumvirate had been involved in computers. "As we were planning the launch we approached a software company, which John Maxwell was part of, to source a product. We'd tried to source it in the States and found it was very expensive at that time, and that the royalty rates being asked were too high, so we turned back to the UK.

A matter of marketing

At this stage Alan Sharman drags himself from his constantly ringing telephone to tell me about the search for those first releases.

"Initially we looked through the magazines and contacted almost every software house that was there to see if there was anyone who would be willing to let us publish their programs. We found some, had some samples sent up to us, and then selected from there.

As Martin recalls: "We were all three of us involved in successful businesses already and it was strictly a marketing exercise. We had no idea how successful it was going to be. And it effectively happened within eight weeks. We were more than just successful – we were incredibly successful.

"We had taken one or two very bold marketing moves. We contacted the main retailers well ahead of our launch warning them that the price of software was about to crash. Some major retailers listened and were very interested. And we realised, after discussion with them, that it was more likely to be a success than a failure.

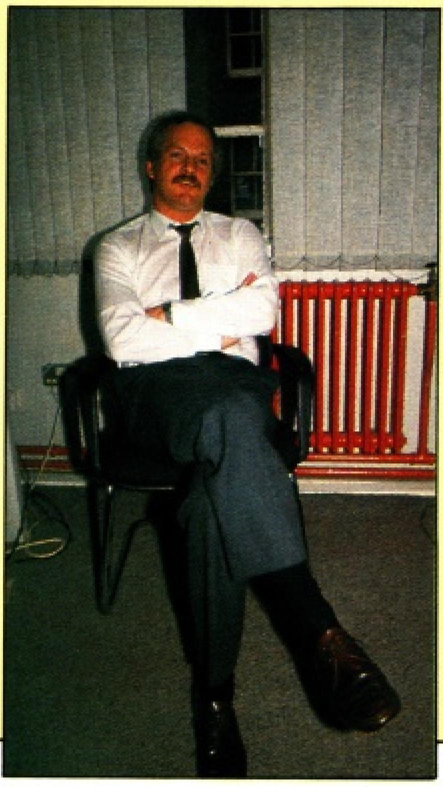
"We then decided to put a lot of money and effort into it and we spent a lot of time developing the packaging, logos and point of sale material. This was all thought out well in advance".

Dealing with distribution

Less dramatic than the sudden drop in price, though equally important in the marketing strategy, was the use of alternative forms of distribution. Martin already had a team of salesmen for his video products and decided to call a sales conference. Everybody was enthusiastic about the idea and suggested other reps. A 62-strong sales team was created, freeing Mastertronic from the existing distribution channels.

"We approached the main retailers and all the independents direct and decided to pitch at unusual forms of distribution – unusual to the software industry but not to others. We took a leaf out of the record industry's book and went for newsagents, where budget records are distributed. And that was very successful". In the two years since then Mastertronic's patterns of distribution have hardened and today most of its product goes through mainstream retailers.

Martin still sees the full price labels as separate from the budget ranges. "We're an impulse buy and people who walk into a petrol station or a newsagent are there to spend £2 on a packet of cigarettes or a magazine. People who are going to spend £10 or £12 on a piece of software go into a computer shop and want specialist advice, maybe needing a lot of coaxing to buy it. It's premeditated purchase".



John Maxwell – making sure the buyers remain impulsive

The man who's responsible for making sure the buyers remain impulsive is John Maxwell, who joined the company in July 1984 to oversee the development of products. When I describe some of the early programs as "less than inspiring" there is much laughter. "We haven't had such flattery for a long time", John says.

However, more seriously he adds: "Assessing a program is a very subjective thing. All the programs we published had something going for them. Some lacked graphics but had playability. Overall we have made our mistakes but if you consider the number we've published, which is something in the region of 150 titles, and look through our sales records you'll find very few have sold badly".

The initial thrust was at the arcade gamers, though soon after the group moved into adventures. In the first year two million £1.99s passed across the counters of Britain. Martin says the graph of sales is a 45 degree upward slope! "This year I would expect us to sell well over six or seven million units which makes us one of the largest software producers in the world".

The speedy initial growth caused a few problems in itself but, as Martin says: "Although the industry viewed us like lepers, the public viewed us like Robin Hood. They forgave us some of our mistakes and we very, very quickly built up a substantial operation". The three directors left their previous companies and became full time board members.

"We had one advantage over most other software companies of the time. We had money behind us and we had researched the market. We didn't do this as an ad hoc thing and knew what our contingency plans were. We had our own in-house duplication facility, our own distribution facility and our own warehouse within a few weeks. We weren't beholden to anybody. And when Websters and the other major distributors came on stream, which they did after a few months, everything slotted into place".

When the time came to enter the Amstrad market, Mastertronic already had some strong titles. Finders Keepers was the first of David Jones's Magic Knight adventures with their brilliantly simple pull down menu control system. Chiller shot up the charts, helped by a little controversy and a speedy name change from Thriller when representatives of Michael Jackson made angry noises. John Maxwell is quite happy about this though. After all – no publicity is bad publicity!

Charting success

When it comes to the charts, Martin doesn't think Mastertronic has always been fairly represented. "The problem is that we were always outselling most other games but the method of assessing the charts means we had to be in certain distribution points which we weren't. So although we were outselling in terms of volume we weren't appearing until we began to make an impact in Boots. We were probably always there, from eight weeks of launch".

The constant appearance of Mastertronic titles riding high is all the more amazing because sampling comes primarily from computer shops, which do not provide its main outlets. And further



Rad-Zone, the latest release

problems have occurred with MicroScope's chart, often taken as the industry standard, which has tried to exclude budget priced games. This low price ghetto has created problems of its own – the only titles that appear are Mastertronic. MicroScope is now requesting that the £2.99 games are listed under Mastertronic's Mad name to break the monotony.

Mad games were launched last October with a lavish Thames boat trip which nobody who was present will forget – and which cost slightly more than £1.99. The thinking behind the range was that it should be an outlet for more ambitious programs, not that there are difficulties maintaining the £1.99 price.

"We wanted a marketing experiment to see if we could put extra effort into programming", Martin says, "and we truly believe that our £2.99 games are the equal of any full price software. But to get that standard of programming takes an extra few months and extra capital investment and that can't be recouped at £1.99".

Programming success

Soon programmers were coming to Mastertronic, according to John Maxwell. "We had quite a lot of publicity because of the price breakthrough and quite a few programmers sent in work for assessment". There are distinct benefits for the person who comes to the company. "He joins a very successful and knowledgeable team, and generally is paid more profitably than some of the other software companies. The volume makes up for the amount of royalty and quite a few programmers have earned considerable sums from Mastertronic".

"One team of two programmers", adds Martin, "in one year earned more than £200,000. The correlation between volume and royalties is something that some programmers don't understand. We give them a vast volume for perhaps a lower royalty. We also give them far greater exposure. But more important, we back our programmers. We help them. We pay our royalties extremely promptly – often before we've been paid for the goods we've shipped".

Such loyalty is demonstrated by David Jones, who has remained with Mastertronic for his two subsequent Magic Knight adventures. "It's a very small industry. Programmers talk to each other and we guard our good name jealously.

"I don't think we've ever lost a programmer – maybe just one. They're happy with what we offer them – providing they're top class. We're looking all the time for better and better programmers. We still have an incredible appetite for games writers – we don't get enough".

Best sellers

Currently Finders Keepers and Nonterraqueous are selling well, but probably the best seller of all time for the company is Formula One Simulator, a program which has gained a new lease of life from its budget re-release after very lukewarm reactions to its initial full-price launch. "Ridiculed or not, the fact is that we've sold more than 400,000 copies", says Martin.



Martin Alper – a one way ticket to the States

This isn't the only Mastertronic title to receive a less than favourable critical reaction – Action Biker gathered some bad reviews too. But Mastertronic has ridden such criticism. Perhaps this can be explained by people taking a chance with a £1.99 game, which they wouldn't with a full priced product.

"And we have a very loyal following", Martin tells me. "We get sacks full of letters. They collect every game we publish. They can buy five games of ours for the price of a mainstream product. If one of those is bad or they don't like it they're still streets ahead".

There's still a problem of prejudice though. "Critics can be very unkind to us. There is still a little bit of snob in the software industry. We constantly ask to be judged not on our price or value for money but the quality of our software. It has to be good. That's John's criteria for publishing software, and that's how we're trying to be judged in the States too".

Across the pond

The move into the notoriously difficult US market was planned from the start. As early as 12 weeks after its launch, Mastertronic was exhibiting at the Chicago CES. "We'd made a dedicated decision to go for the American market as well. Now that takes a lot of bottle and a lot of capital investment. We're the only British company to sit it out.

"It's taken a lot longer in the States. They weren't just sitting there waiting for an English company to come and take the market apart. But I think that in just two years we've achieved the most remarkable results. And we're now being besieged by a flood of imitators. Everyone is trying to jump on the Mastertronic bandwagon out there.



It's a Mad world for Alison Beasley

Again we've established a very big lead. We are the kings of budget".

Alan again breaks away from his last minute Chigago planning. "It's a very different operation from doing full price software, which people don't realise". The average price of games in the States is \$35 – £24 for the same games they can buy here. We're selling there for \$9".

"American taste is totally different from ours. Our success is in the strict arcade format. They don't tend to go in for animated arcade adventures or anything too complex. They do like very cleverly programmed, skilful arcade games".

Martin's trip to the States will be a one way affair – he's going to take over the American side of the operation. "It's already being run effectively by remote control by the three of us here, but it does need one of us full-time over there to make the day to day decisions".

One problem he's preparing to face is scale. "Almost every phone call you make is long distance. If you say, 'I'll pop over to see you', even in a State the distances may be two or three hundred miles. That's considered near. Distribution is a severe headache and they won't take anything second rate".

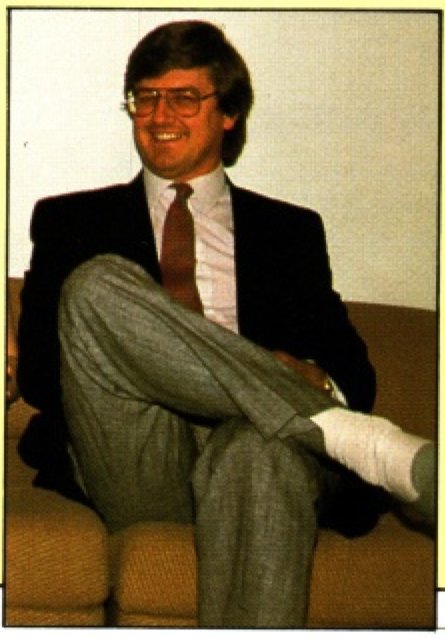
The American operation provides a two-way trade and one reason for Martin's Californian base is to be nearer the centre of programming activity. "There is an enormous pool of very skilful programming talent in the States, but it's difficult to tap because of the distances and it's difficult for a UK software house to use it because talking about programs on the telephone, even using modems, isn't very effective. You need to discuss your ideas face to face".

While Americans might be slow to accept British software the same isn't true the other way around. "All software will sell over here. The British have an incredible appetite for software whereas the American market is very blinkered".

When it comes to British competitors for the budget crown Martin says, "It's a game strictly for professionals. Most of the other people who've tried it are restrained by the fact that they're trying to run a full price software label as well. That's their big headache. There's always a conflict between which way you're going to go.

"Mastertronic won't be going in for more expensive software because it's not an idea we believe in. We consider full price software to be our price".

This also stops Amstrad disc-based software appearing, at least in the near future, because of the cost of the discs themselves. It's a pity because the Ski Writer word processor is one of this year's Chicago triumphs.



Alan Sharman – "American tastes are totally different from the British".

Into the future

Looking ahead, the end of 1987 will see another major step forward for Mastertronic when it goes public, selling shares in the company. A few days earlier the third director, Frank Herman, had told me over the phone that they would be looking for capitalisation to develop new projects, which could include the use of laser discs as a storage medium.

Martin tells me that the company watches all technological developments but only gets interested when it can produce them cheaper than anybody else. As John says, laser discs are the subject of much research, especially in Japan. "You can see the ultimate computer game of the future being like taking an active role in a film".

Another area the company will be prepared for is the 16-bit revolution. According to Martin all the best American programmers are working for these machines now and he adds: "We're already doing ST software. Whether it's going to be released in the UK remains to be seen". John reckons that "It's bound to happen eventually over here, probably in about 18 months. Somebody will develop a computer with the right marketing and the right quality at the right price". I'd bet that Alan Sugar is a prime contender for this role and Martin's question to me about the IBM-compatible would suggest that his mind is working along similar lines.

The Chicago CES products include Digital Integration's Speed King, English Software's Electra Glide and even Ocean's World Series Baseball, going by the name of Slugger and selling at \$9 compared with the \$30 prices of competing baseball games. Not surprisingly it has been a great success. Other companies are clearly finding it profitable to take advantage of Mastertronic's positioning in the US.

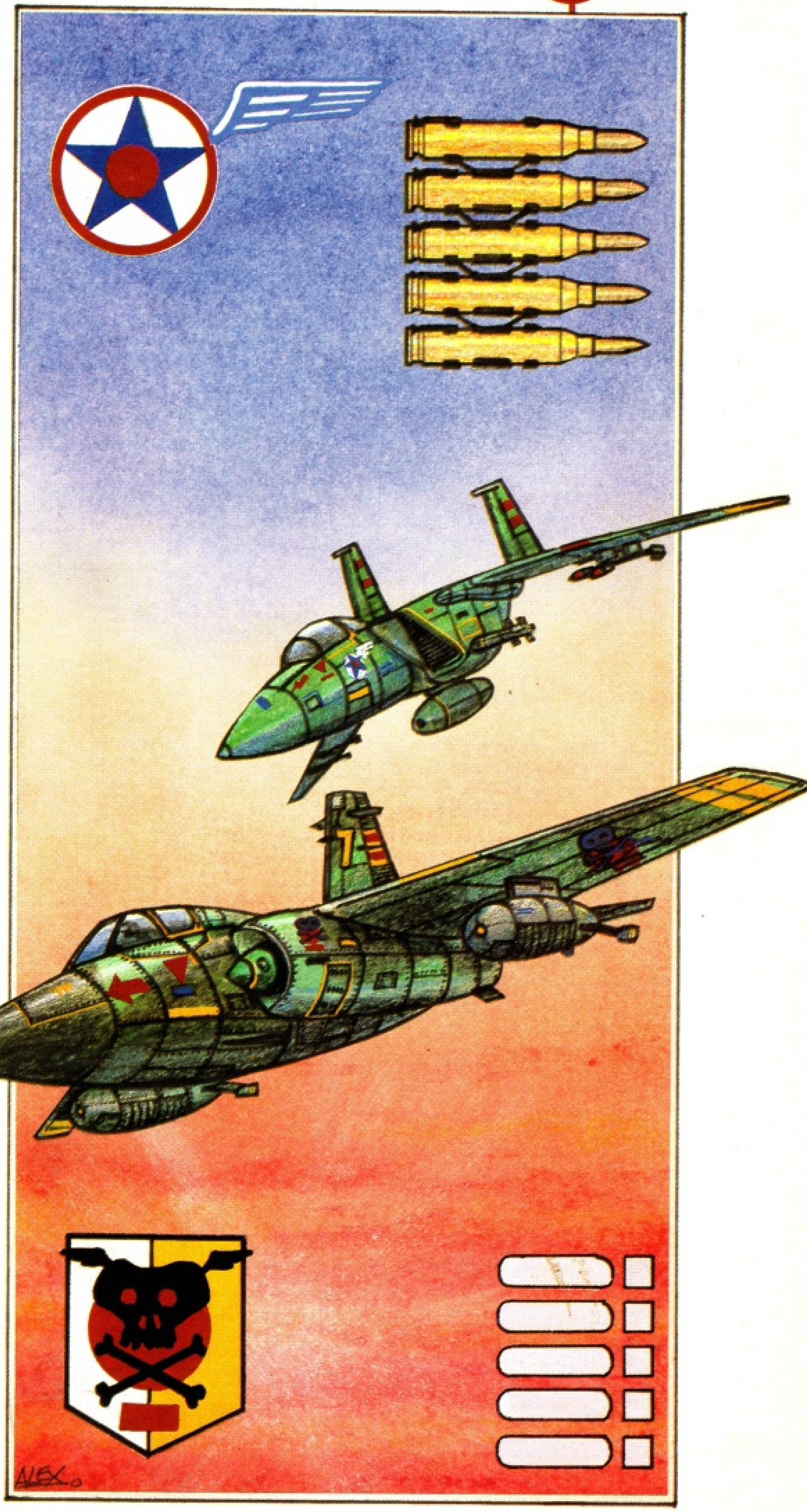
As the interview nears its end I'm treated to a preview of two new releases for the Amstrad by PR person, Alison Beasley. First up is Radzone, a very attractive collecting game in which you have to gather radioactive isotopes from a planet before they eat through your radiation suit. It's a strangely relevant topic, but Alison denies that the company masterminded Chernobyl as a publicity stunt!

The other program was in a very early state, but even this preview was enough to thrill. Storm is a version of the arcade cult, Gauntlet. What really sets it apart is that as well as providing a one player hunt through the mystical castle, there's also a two player mode, allowing for a more accurate recreation of the full size machine's cooperative gameplay. Amazingly it will sell for only £1.99.

Looking ahead Mastertronic aims, according to Martin, "to consolidate our position in the market and grow steadily upwards. We're not greedy. We just want to establish a principle that £1.99 and £2.99 are the definitive prices and any software of any standard can be produced within those points".

ACU

INTERCEPTOR



Here's this month's helping of listing for you to type in. This is a flight combat game where you pilot a high powered fighter jet to intercept marauding enemy aircraft.

You see the pilot's view through the cockpit screen and you have controls to move left and right, up and down and fire missiles. There is only a certain amount of time before your fuel runs out and of course your supply of missiles is limited.

There is only one part to the listing, but it does contain some machine code so type in the whole program and save it before you try to run it.

We've altered the program to work with a joystick so if you want to put it back to its original state – using the keyboard – you'll need to change these numbers in lines 140-180. Sensibly, Kevin Freeman has used Inkey so it is easy to change from one to the other.

Change	To
72	69
73	71
74	46
75	38
76	47

Kevin writes – The majority of the program runs in Basic with an RSX to increase printing speed, in the form ISPRITE,x,y,p.X(0-39),y(0-24) referring to a position on the Mode 0 screen. p is a pointer to a memory position containing data for a sprite – the first two bytes being the x,y dimensions.

Note that this sprite handler does not plot over odd numbered pens giving the illusion of depth in the game. If the sprite is plotted at the same position twice then it will erase itself.

```
10 REM ......................... INTERCEP
   TOR ..............................
20 REM ..............................wri
   tten by K.Freeman ................
30 REM .........................all REM's
    removable........................
40 GOSUB 1210:GOSUB 1310
50 LOCATE 8,20:PEN 3:PRINT"press SPACE t
   o accept":WHILE INKEY(47)<>0:WEND
60 SYMBOL 42,124,198,198,199,199,198,124
70 SYMBOL 48,124,198,198,198,199,199,124
80 GOSUB 700:GOSUB 860:hi=200
90 fl=999:mn=25:ms=0:sc=0
100 X%=10:Y%=10
110 GOSUB 790:GOSUB 660
120 REM ..........................contro
    l.........................
130 WHILE fl>0 AND mn>0
140 IF INKEY(72)=0 THEN y%=y%+1
150 IF INKEY(73)=0 THEN y%=y%-1
160 IF INKEY(75)=0 THEN x%=x%-2
170 IF INKEY(74)=0 THEN x%=x%+2
180 IF INKEY(76)=0 AND m=0 THEN m=1:SOUN
    D 2,200,70,12,,,6
190 IF m>0 THEN GOSUB 500
200 GOSUB 580:GOSUB 760
210 IF fl=75 THEN INK 13,24,6:SOUND 4,50
    0
```




```
220 IF mn=5 AND ms=0 THEN INK 15,24,6:SOUND 4,400:ms=1
230 IF hit=1 THEN GOSUB 330
240 IF SQ(1)=4 THEN SOUND 1,100,3000,4,,,4
250 WEND
260 SOUND 129,0:SOUND 1,1000
270 WHILE INKEY$<>"":WEND:PEN 9:INK 9,8,12:LOCATE 7,2:PRINT"Disengage"
280 FOR t=1 TO 900:NEXT:LOCATE 7,2:PRINT"p to play"
290 WHILE INKEY(27)<>0:WEND:GOSUB 660:INK 13,5:INK 15,13:INK 9,15
300 LOCATE 7,2:PRINT"                ":GOTO 90
310 END
320 REM ........................hit...................................
330 SOUND 2,400,100,10,,,4
340 |SPRITE,17,10,ex:FOR t=1 TO 90:NEXT
350 |SPRITE,15,11,ex:|SPRITE,19,11,ex:|SPRITE,17,10,ex
360 |SPRITE,15,11,ex:|SPRITE,16,12,ex:|SPRITE,19,11,ex:|SPRITE,15,13,ex
370 FOR t=1 TO 100:NEXT:|SPRITE,16,10,ex:|SPRITE,18,14,ex:GOSUB 660
380 |SPRITE,16,12,ex:|SPRITE,15,13,ex
390 FOR t=1 TO 75:NEXT:|SPRITE,16,10,ex:|SPRITE,18,14,ex
400 |SPRITE,10,10,ex:|SPRITE,24,15,ex:|SPRITE,7,15,ex
410 FOR t=1 TO 75:NEXT
420 |SPRITE,5,10,ex:|SPRITE,10,10,ex:|SPRITE,35,15,ex:|SPRITE,24,15,ex
430 |SPRITE,5,18,ex:|SPRITE,7,15,ex
440 FOR t=1 TO 60:NEXT
450 |SPRITE,5,10,ex:|SPRITE,35,15,ex:|SPRITE,5,18,ex
460 sc=sc+(fl/25):GOSUB 810
470 x%=RND*20+10:y%=RND*10+2
480 FOR t=1 TO 50:NEXT:hit=0:GOSUB 660:RETURN
490 REM ............................missile..............................
500  IF m=1 THEN 530
510 |SPRITE,20,17-m,mpointer(m-1)
520 IF m=6 THEN m=0:mn=mn-1:PEN 15:PAPER 1:LOCATE 7,24:PRINT USING "**";mn:GOTO 550
530 |SPRITE,20,16-m,mpointer(m)
540 m=m+1:RETURN
550 IF (y%>8 AND Y%<11) AND (x%<20 AND x%>14) THEN hit=1:RETURN
560 RETURN
570 REM ............................aircraft..............................
580 x%=x%+RND-RND:y%=y%+RND-RND
590 IF x%>20 THEN x%=x%+1 ELSE x%=x%-1
600 IF x%>30 THEN x%=30
610 IF x%<0 THEN x%=0
620 IF y%>20 THEN y%=20
630 IF y%<0 THEN y%=0
640 IF x%=x1 AND y%=y1 THEN RETURN
650 |SPRITE,x1,y1,air
660 |SPRITE,x%,y%,air
670 x1=x%:y1=y%
680 RETURN
690 REM ..........................set sprite pointers.......................
700 DIM mpointer(5)
710 RESTORE 720:FOR t=1 TO 5:READ d:mpointer(t)=d:NEXT:ex=&A1CA:air=&A076
720 DATA &a168,&a197,&a197,&a1bb,&a1c5
730 RESTORE 740:FOR t=0 TO 15:READ ik:INK t,ik:NEXT:BORDER 0
740 DATA 1,0,18,23,11,4,6,8,9,15,20,2,19,5,16,13
750 RETURN
760 fl=fl-1:PEN 13:PAPER 1
770 LOCATE 15,24:PRINT USING "**#";fl
780 RETURN
790 PEN 15:LOCATE 5,24:PRINT CHR$(239);":25:";
800 PEN 13:LOCATE 13,24:PRINT CHR$(166);":500"
810 PEN 7:LOCATE 9,3:PRINT USING "**##";sc
820 IF sc>hi THEN hi=sc
830 PEN 5:LOCATE 9,1:PRINT USING "**##";hi
840 RETURN
850 REM .......................draw screen.............................
860 MODE 0:DEG
870 ENT -7,20,1,1,20,-1,1:SOUND 1,200,9999,10,,7
880 FOR t=1 TO 90
890 PLOT 288*COS(t),112+250*SIN(t),1
900 PLOT 286*COS(t),110+250*SIN(t),3
910 PLOT 640+288*COS(180-t),112+250*SIN(t),1
920 PLOT 640+286*COS(180-t),110+250*SIN(t),3
930 NEXT
940 PEN 1:PAPER 0
950 a$=CHR$(143)+CHR$(143)+CHR$(143)+CHR$(215)
960 b$=CHR$(214)+CHR$(143)+CHR$(143)+CHR$(143)
970 FOR t=1 TO 4
980 LOCATE 1,18+t:PRINT RIGHT$(a$,t)
990 LOCATE 21-t,18+t:PRINT LEFT$(b$,t)
1000 NEXT
1010 b$=LEFT$(b$,2):c$=RIGHT$(a$,2):a$=LEFT$(a$,2)
1020 LOCATE 10,18:PRINT a$
1030 LOCATE 9,19:PRINT b$;c$
1040 LOCATE 9,20:PRINT a$;a$
1050 LOCATE 8,21:PRINT b$;a$;c$
1060 LOCATE 7,22:PRINT b$;a$;a$;c$
1070 FOR t=1 TO 10:s$=s$+a$::NEXT
1080 LOCATE 1,24:PAPER 8:PRINT p$;:PAPER 0
1090 FOR t=23 TO 25:LOCATE 1,t:PRINT s$;:NEXT
1100 LOCATE 5,1:PRINT RIGHT$(s$,12):LOCATE 6,2:PRINT RIGHT$(s$,10)
1110 LOCATE 9,3:PRINT RIGHT$(s$,4);
1120 LOCATE 1,1:PRINT CHR$(212):LOCATE 20,1:PRINT CHR$(213)
1130 LOCATE 1,1: PRINT CHR$(22);CHR$(1):PAPER 1
1140 PEN 7:LOCATE 12,22:PRINT CHR$(232);CHR$(233)
1150 PEN 3:LOCATE 10,20:PRINT CHR$(230):LOCATE 10,21:PRINT CHR$(226);
1160 PEN 9:LOCATE 12,21:PRINT CHR$(190):LOCATE 8,22:PRINT CHR$(202);CHR$(202);
1170 PRINT CHR$(22);CHR$(0);
1180 SOUND 129,0
1190 RETURN
1200 REM .........................title page.........................
1210 MODE 1:PEN 2
1220 LOCATE 13,5:PEN 3:PRINT "INTERCEPTOR"
1230 LOCATE 1,8:PEN 2:PRINT"MISSION:"
1240 LOCATE 9,9:PEN 1:PRINT"Intercept and destroy enemy"
1250 LOCATE 6,10:PRINT"fighter-bombers,attempting  to"
1260 LOCATE 6,11:PRINT"penetrate air space."
1270 LOCATE 6,14:PEN 2:PRINT"limited fuel & missiles"
1280 LOCATE 1,24:PEN 3:PRINT"control:";
1290 LOCATE 1,25:PEN 1:PRINT"A=up  Z=down  N=left  M=right SPACE=fire";
1300 LOCATE 1,1:RETURN
1310 SYMBOL AFTER 256:MEMORY &9FFF:SYMBOL AFTER 32
1320 RESTORE 1440
1330 FOR t=&A000 TO &A075:READ d$
1340 d=VAL("&"+d$)
1350 POKE t,d
1360 NEXT
1370 CALL &A000
1380 RESTORE 1510
1390 FOR T=&A076 TO &A20B:READ D:POKE T,D:NEXT
1400 RETURN
1410 REM .........................sprite controler.....................
1420 REM .................double check before running....................
1430 REM .....................save program first !!......................
1440 DATA 01,0E,A0,21,0A,A0,CD,D1,BC,C9,00,00,00,00,13,A0,C3,1A,A0
1450 DATA 53,50,52,49,54,C5,00,CD,19,BD,11,50,00,21,B0,BF,DD,46,02
1460 DATA 04,19,10,FD,DD,7E,04,07,5F,16,00,19,DD,56,01,DD,5E,00,1A
1470 DATA 47,13,1A,4F,13,C5,E5,E5,D5,11,75,A0,3E,00,12,7E,CB,7F,20
1480 DATA 05,F5,3E,AA,12,F1,CB,77,20,04,1A,F6,55,12,EB,D1,1A,A6,E1
1490 DATA AE,77,23,13,10,DB,E1,01,00,08,09,30,04,01,50,C0,09,C1,0D
1500 DATA 20,CA,C9,00
1510 REM ........................aircraft sprite data ...............
1520 DATA 16,15
1530 DATA 0,0,0,0,0,21,0,0,0,0,42,0,0,0,0,0
1540 DATA 0,0,0,0,0,21,0,0,0,0,42,0,0,0,0,0
1550 DATA 0,0,0,0,0,21,0,0,0,0,42,0,0,0,0,0
1560 DATA 0,0,0,0,0,21,0,0,0,0,42,0,0,0,0,0
1570 DATA 0,0,0,0,0,21,0,0,0,0,42,0,0,0,0,0
1580 DATA 0,0,0,0,0,21,0,0,0,0,42,0,0,0,0,0
1590 DATA 0,0,0,0,0,21,0,0,0,0,42,0,0,0,0,0
1600 DATA 0,0,0,0,0,21,0,17,10,0,42,0,0,0,0,0
1610 DATA 0,0,0,0,0,63,0,39,48,0,62,0,0,0,0,0
1620 DATA 0,0,0,0,21,60,43,24,33,23,60,42,0,0,0,0
1630 DATA 0,0,0,3,62,57,61,3,3,62,54,61,3,0,0,0
1640 DATA 3,3,3,3,62,51,61,3,3,62,51,61,3,3,3,3
1650 DATA 0,0,0,0,62,57,61,51,51,62,54,61,0,0,0,0
1660 DATA 0,0,0,0,21,60,42,0,0,21,60,42,0,0,0,0
1670 DATA 0,0,0,0,0,63,0,42,21,0,63,0,0,0,0,0
1680 REM .........................missile sprite data .................
1690 DATA 3,15
1700 DATA 0,17,0,0,17,0,0,51,34,0,50,34,0,50,34,0,50,34,16,50,50,16,57
1710 DATA 56,0,60,42,20,60,40,21,61,61,0,62,60,0,60,40,0,61,0,0,21,0
1720 DATA 2,10
1730 DATA 17,0,17,0,17,0,51,34,50,34,52,32,62,42,61,40,62,40,20,0
1740 DATA 2,6
1750 DATA 0,34,0,34,62,62,20,40,20,62,40,40
1760 DATA 2,4
1770 DATA 20,40,62,62,61,61,21,40
1780 DATA 1,3,60,61,60
1790 REM .........................explosion data ......................
1800 DATA 8,8
1810 DATA 0,20,20,0,0,0,0,0,21,0,36,40,0,20,42,40
1820 DATA 0,0,1,20,0,0,40,23,61,0,0,60,63,60,0,0
1830 DATA 0,40,20,61,22,40,20,42,0,0,0,60,40,61,0,20
1840 DATA 20,21,0,62,0,40,0,0,0,0,40,0,20,20,0,0
```

ACU

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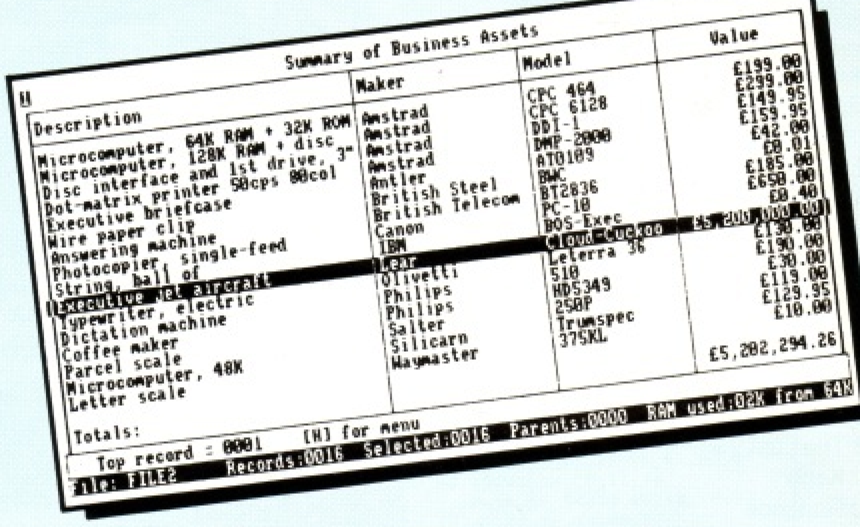
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MASTERFILE III

FOR THE AMSTRAD CPC 6128 (ALSO CPC 464/664 WITH DK 'TRONICS 64K RAM)

RATHER ENHANCED ...

We are pleased to announce the third major issue of MASTERFILE. This is no mere update, but a thoroughly enhanced and streamlined re-design of MASTERFILE 128, packed with new features, and a delight to use. We included some of the best ideas which our earlier MASTERFILE customers contributed. We sent prototypes out to our eager "test" users, and they kicked it as hard as they could, and came up with even more ideas. We spent several weeks further honing MASTERFILE III. Then we sat down and totally rewrote the manual.



SOMEWHAT POWERFUL ...

For the benefit of newcomers to the CPC machines, MASTERFILE III is a very powerful and flexible data filing and retrieval system. All "database" systems require that your data is organised into fields and records. But unlike most, MASTERFILE does not commit you to field lengths or formats, since ALL data is variable-length and optional. Files are not pre-formatted, and only used bytes are saved to disc. Also, unlike the rest, MASTERFILE allows multiple user-defined ways of viewing/printing your data. And unique in its price range, MASTERFILE offers RELATIONAL FILE options, whereby common data can be entered just once and shared by many records. Maximum field size is 240, maximum fields per record is over 50, and maximum file size is 64K. Room for 1,000 full names and addresses, for example. Only one disc drive is required. It is menu-driven throughout, and comes with detailed illustrated manual, and example files.

EVER SO FAST ...

Just about **Any** kind of information can be handled by MASTERFILE. You can **Export** the data to other systems (e.g. PROTEXT/MERGE and TASWORD). You can even merge your own USER BASIC to MASTERFILE for customised file processing. You can build new files from other sources — e.g. transfer data from Spectrum MASTERFILE. The speed of **Search** of MASTERFILE is second to none. We even get calls from customers who say that "The search did nothing"; they simply blinked and missed the revised status saying how many records had been found! Records can be sorted ascending/descending, character or signed numeric, even embedded keys such as surnames. We simply don't have room to list all the features; give us a call if you are still in doubt of the power of MASTERFILE III.

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How much does it cost? Just £39.95. Our test customers all say this is far too low — but then we didn't charge them this! However, we appreciate that many of you are "home" users who do not want to pay a "business" price. So we kept to a realistic figure. But don't be fooled by the low price. This is no toy written in **Basic**, nor is it a lumbering CP/M dinosaur. This is real machine-coded computing power. We have had IBM and Apricot users beg us for a MASTERFILE for their machines — when they had seen the earlier CPC MASTERFILE. They are going to be more frustrated now. So are the PCW plodders. Alas, many of you pay a lot more, because you buy one database after another before you throw them all out for MASTERFILE. The trick is to ask around, read the reviews and choose MASTERFILE III first time. Try telephoning our competitors and ask to speak to the programmer for technical information. Then try us. We think you will spot the difference!

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SPACE MANIA

By Neil Kolban

Here is the final episode of Space Mania. Once it is all typed in and run together as explained in Part One you should have a super game.

Unfortunately in last month's issue we mangled some lines – line 1390 moved to the bottom of the first box. This does not matter because all the lines will sort themselves out once the listing is typed in.

Good luck and happy typing. Please note that Space Mania does not appear on any of the listing discs.

```
2840 DATA 8B3A349FA7C45095, 1000
2850 DATA CDB098CD8F93ED4B, 1340
2860 DATA 089FED43059F3A0A, 703
2870 DATA 9F32079FCD6C5530, 821
2880 DATA 30CD3793FEFF2005, 1001
2890 DATA CDA28B1824FE1E20, 882
2900 DATA 083A2A9FA7283618, 552
2910 DATA 18FD3600FEDD352A, 901
2920 DATA F5CDA556F1FE2728, 1275
2930 DATA 0E3E00110100CD64, 399
2940 DATA 93CDC28EC3918A3A, 1224
2950 DATA 299FCB27F6013229, 780
2960 DATA 9FDD363464010606, 599
2970 DATA CD38BC18E40100B0B, 724
2980 DATA CD38BC3E05110100, 534
2990 DATA CD6493CD239EDD36, 1125
3000 DATA 0F01DD36100003A08, 373
3010 DATA 9FCD1F8E3A0F9FFE, 1023
3020 DATA 012024CD5A8F1600, 529
3030 DATA CDCD8DCD498DCDB0, 1351
3040 DATA 98CD8F93CDC28EED, 1425
3050 DATA 4B089FED43059F3A, 768
3060 DATA 0A9F32079F18CF3E, 678
3070 DATA 03CDA192DD362828, 870
```

```
3080 DATA CD5A8FCDB098CD8F, 1319
3090 DATA 933A0A9FED4B089F, 853
3100 DATA CD2456CDC28EDD35, 1142
3110 DATA 2820E53E01C9E13E, 852
3120 DATA 00C9DDCB2946C0E1, 1153
3130 DATA 060AC5CDC28EC110, 963
3140 DATA F9CDCA933E02C93E, 1130
3150 DATA 13CDA1923E26320A, 691
3160 DATA 9F32079F060A0EA0, 565
3170 DATA ED43059FED43089F, 939
3180 DATA CDA556ED4B089F04, 939
3190 DATA 78FE46281BED4308, 823
3200 DATA 9F11059FCDD88ECD, 1108
3210 DATA 8F93CDC28E2A089F, 1040
3220 DATA 22059FCD469418DB, 864
3230 DATA CD1E8ACD2D8A2A3F, 866
3240 DATA 9F2B223F9F7CB528, 803
3250 DATA 3ECDA18CCD1395CD, 1146
3260 DATA 2D95CD498DCDD294, 1176
3270 DATA CD2B92CD8F93CD9D, 1251
3280 DATA 94ED4B089FED4305, 936
3290 DATA 9F3A0A9FCD6C5530, 832
3300 DATA CDDDCB294620C7ED, 1208
3310 DATA 4B089F3A0A9FC5CD, 871
```

```
3320 DATA A556C1CD649DC93E, 1169
3330 DATA 00110200CD64933E, 533
3340 DATA 03CDA192ED4B089F, 994
3350 DATA 0478FE48301DED43, 831
3360 DATA 089FCD498DCDD294, 1149
3370 DATA CD8F93ED4B089FED, 1211
3380 DATA 43059FCD2B92CDC2, 1024
3390 DATA 8E18D9DD362832ED, 985
3400 DATA 4B089F3A0A9FCD24, 710
3410 DATA 56CD2B92DDE5CD46, 1205
3420 DATA 94DDE1CDC28EDD35, 1409
3430 DATA 2820E4CD18553E01, 677
3440 DATA C9CD24BBCB27CB27, 1113
3450 DATA E60C571E003E45CD, 695
3460 DATA 1EBB2802CBD23E47, 805
3470 DATA CD1EBB2802CBDA18, 909
3480 DATA 39110000CD24BBCB, 705
3490 DATA 472004CB672802CB, 658
3500 DATA E2CB572802CBCACB, 1166
3510 DATA 5F2802CBC23E47CD, 872
3520 DATA 1EBB2802CBCA3E3F, 789
```

```
3530 DATA CD1EBB2802CBC23E, 923
3540 DATA 15CD1EBB2802CBE2, 914
3550 DATA 18003E4FCD1EBB28, 627
3560 DATA 02CBC33E17CD1EBB, 907
3570 DATA 28243E3ECD1EBB28, 662
3580 DATA 02CBCB3E3CCD1EBB, 952
3590 DATA 2802CBEB3E43CD1E, 844
3600 DATA BB2802CBE33E26CD, 964
3610 DATA 1EBB2802CBF33E1B, 794
3620 DATA CD1EBB2802CBD33E, 940
3630 DATA 22CD1EBB2802CBDB, 920
3640 DATA 3E42CD1EBBC2C489, 1077
3650 DATA C911059FCDD88EC9, 1146
3660 DATA ED4B089F7AE603FE, 1088
3670 DATA 032827CB4A280F78, 534
3680 DATA A7280B053A0A9FEE, 688
3690 DATA 01F680320A9FCB42, 863
3700 DATA 281078FE4D300B04, 570
3710 DATA 3A0A9FEE01E67F32, 873
3720 DATA 0A9FCB52280879FE, 877
3730 DATA 0338030D0D0DCB5A, 394
3740 DATA 280D79FEA230080C, 658
3750 DATA 0C0CDD341F1804DD, 577
3760 DATA 361F00ED43089F3A, 614
3770 DATA 0A9FCB7F20020404, 541
3780 DATA 79C6054FC5CD4255, 956
3790 DATA C17EA7C879C6044F, 1088
3800 DATA CD42557EA7C83A06, 913
```

```
3810 DATA 9F32099FC93A0F9F, 810
3820 DATA FE052827FE01200C, 637
3830 DATA EBDA7AE6FCDDB610, 1444
3840 DATA 57C3508DFE04200F, 808
3850 DATA DD35112804CBD218, 772
3860 DATA E9DD360F0118E1CB, 976
3870 DATA 62280DDD361109DD, 673
3880 DATA 360F04DD721018E0, 672
3890 DATA A7CA508DFE022005, 883
3900 DATA CBCAC3508DFE0320, 1110
3910 DATA 05CBC2C3508DC93A, 1077
3920 DATA 0F9FFE04C83A089F, 857
3930 DATA CD5A92A7C0ED4B08, 1120
3940 DATA 9F79C6124F04CD42, 850
3950 DATA 557EA72809FE3020, 761
3960 DATA 27DD360F00C92B7E, 699
3970 DATA A7201523237EA720, 615
3980 DATA 0F3A0F9FFE01C8DD, 923
3990 DATA 360F01DD361000C9, 562
4000 DATA 3A0F9FFE01C018D9, 920
4010 DATA FE702005DD360F02, 695
4020 DATA C9FEB02005DD360F, 958
4030 DATA 03C9FE602005DD36, 866
4040 DATA 0F05C9FEFC20D0DD, 1188
4050 DATA 360F00ED4B089F04, 552
4060 DATA 78E6FC4779C6184F, 1095
```

```
4070 DATA C5CD4255C17EA720, 1071
4080 DATA 050D0D0D18F21603, 335
4090 DATA 1E043600231D20FA, 434
4100 DATA 15C80CD5C5CD4255, 999
4110 DATA C1D118ECCD1BBB38, 1137
4120 DATA FBC9CD0DBDED5B59, 1276
4130 DATA 9FA7ED527DFE1438, 1100
4140 DATA F1CD0DBD22599FC9, 1131
4150 DATA 2A0B9F7323722322, 545
4160 DATA 0B9FDD340EC921F2, 933
4170 DATA 8E068111FC8ECDD7, 1108
4180 DATA BCC9FEB100B20081, 1127
4190 DATA FC8E00303A0D9FCB, 875
4200 DATA 47C03A0E9FA7C8CD, 1066
4210 DATA 09B9F53A0D9FF601, 916
4220 DATA E6FD320D9FDDE5DD, 1376
4230 DATA 21009F2A0B9F2B56, 533
4240 DATA 2B5E220B9F626B4E, 624
4250 DATA 2346237E23E5CDA5, 900
4260 DATA 56E14E2346237EFE, 909
4270 DATA FF2803CDA556DD35, 1028
4280 DATA 0E280C3A0D9FEE02, 536
```

```
4290 DATA 320D9FCB4F20CCDD, 961
4300 DATA CB0D86DDE1F1CD0C, 1254
4310 DATA B9C9FD210024FD7E, 1087
4320 DATA 00FEFFC8FE042803, 1010
4330 DATA A7207CFD4E06FD71, 1026
4340 DATA 03FD4607FD7004FD, 955
4350 DATA 7E08FD7705FD7E09, 899
4360 DATA A7281EFD350B2015, 607
4370 DATA ED44FD770957FD7E, 1152
4380 DATA 0DFD770BFD7E08EE, 1021
4390 DATA 80FD77087A81FD77, 1131
4400 DATA 06FD7E0AA7281EFD, 885
4410 DATA 350C2015ED44FD77, 795
4420 DATA 0A57FD7E0EFD770C, 874
4430 DATA FD7E08EE80FD7708, 1133
4440 DATA 7A80FD7707FD7E00, 1008
4450 DATA FE042808FD7E08EE, 931
4460 DATA 01FD7708FDE5D113, 1091
4470 DATA 1A6F131A67E5FDE1, 992
4480 DATA 13CDD88EC35E8FFE, 1268
4490 DATA 012008FD7E08FD77, 800
4500 DATA 0518DCFD6E01FD66, 968
4510 DATA 02E5FDE1C35E8F21, 1174
4520 DATA 002D22479FCD0E90, 672
4530 DATA 2A479F36FFC93A20, 872
4540 DATA 9FCB2721002F856F, 725
4550 DATA 7CCE00677E23666F, 807
4560 DATA 4E234623ED43089F, 689
```

```
4570 DATA ED43059F7E23320A, 689
4580 DATA 9F32079FFD210024, 697
4590 DATA 7E23FD7700FEFFC8, 1242
4600 DATA FE07D2F390FE0428, 1156
4610 DATA 03A720484EFD7103, 721
4620 DATA FD71062346FD7004, 846
4630 DATA FD7007237EFD7705, 910
4640 DATA FD7708237EFD7709, 922
4650 DATA 237EFD770A237EFD, 957
4660 DATA 770BFD770D237EFD, 929
4670 DATA 770CFD770E23FDE5, 1034
4680 DATA D17BC60F5F7ACE00, 968
4690 DATA 57FD7301FD7202D5, 1038
4700 DATA FDE118A4FE01202B, 996
4710 DATA FDE5D17BC6095F7A, 1238
4720 DATA CE00574E2346237E, 637
4730 DATA 23FD7103FD7106FD, 1029
4740 DATA 7004FD7007FD7705, 865
4750 DATA FD7708FD7301FD72, 1116
4760 DATA 0218CCFE043029FE, 831
4770 DATA 022003DD342AFDE5, 834
4780 DATA D17BC6065F7ACE00, 959
4790 DATA 57FD7301FD72024E, 903
4800 DATA 23FD71034623FD70, 874
4810 DATA 047E23FD7705189F, 725
4820 DATA C33890FDE5FD2A47, 1243
4830 DATA 9FFD7700FE08283C, 893
4840 DATA FE0720564E23FD71, 858
4850 DATA 034623FD70047E23, 638
4860 DATA FD77057E23FD7706, 916
```

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4870 DATA FD77077E23FD7708, 920
4880 DATA 7E23FD7709FDE5D1, 1233
4890 DATA 3E0A835F7ACE0057, 713
4900 DATA FD7301FD7202ED53, 1058
4910 DATA 479F181E4E23FD71, 763
4920 DATA 034623FD70047E23, 638
4930 DATA FD77057E23FD7706, 916
4940 DATA 7E23FD7707FD7708, 920
4950 DATA 18C6FDE1C3389021, 1128
4960 DATA 00247EFEFFC8235E, 1000
4970 DATA 235623D54E234623, 587
4980 DATA 7ECDA556E118EBCD, 1271
4990 DATA 14BC3A209F3C11B4, 714
5000 DATA 00214C2F193D20FC, 526
5010 DATA 0E0006005623E57A, 492
5020 DATA CB3FCB3FCB3FCB3F, 1064
5030 DATA A72809C603D5C5CD, 1032
5040 DATA A556C1D178C60447, 1046
5050 DATA 7AE60F2807C603C5, 812
5060 DATA CDA556C1E178C604, 1196
5070 DATA 47FE5020CF79C609, 972
5080 DATA 4FFEA238C5C93E00, 1011
5090 DATA CD59BCCD99983E00, 1054
5100 DATA CDA192CD22933E01, 961
5110 DATA CDA192CD0593DDCB, 1293
5120 DATA 2C4628053E08CDA1, 595
5130 DATA 92DDCB2946C83E06, 949
5140 DATA CDA192C911005006, 816
5150 DATA 40CD0055FEA230F9, 1067
5160 DATA 1213CD0055E67F3C, 744
5170 DATA FE5030F6121310E9, 914
5180 DATA DD364A402100504E, 604
5190 DATA 234623E5CD42553E, 787
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5200 DATA 50AE77E1DD354A20, 978
5210 DATA EE189B2100500D36, 805
5220 DATA 4A404E2346E5C5CD, 952
5230 DATA 42553E50AE77C105, 784
5240 DATA 200A064F3E4F856F, 512
5250 DATA 7CCE00672B3E50AE, 792
5260 DATA 77E17023DD354A20, 871
5270 DATA D9C9FE513803D651, 1107
5280 DATA C8D609C8D818FA11, 1130
5290 DATA DA00210082CDABBB, 944
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5300 DATA 3EDA210080F5E5CD, 1120
5310 DATA A8BBE1F13CC81108, 1106
5320 DATA 001918F1FE30DA5A, 900
5330 DATA BBFE3A3005C6C4C3, 1141
5340 DATA 5ABBFE41DA5ABBFE, 1345
5350 DATA 5BD25ABBC699C35A, 1214
5360 DATA BBCB27218D58856F, 935
5370 DATA 7CCE00677E23666F, 807
5380 DATA 7E23A7C8FE7F2809, 958
5390 DATA FE7E2842CD849218, 993
5400 DATA EFE5CD93BBCDDEBB, 1621
5410 DATA CD78BB16007C3DCB, 922
5420 DATA 27CB27CB27CB27CB, 968
5430 DATA 12CB27CB125F2600, 614
5440 DATA 3E1A95CB27CB27CB, 924
5450 DATA 27CB27CB146FCDC0, 1012
5460 DATA BB3E01CD63BB3E01, 804
5470 DATA CD59BCE118B23E00, 971
5480 DATA CD63BB18AB06410E, 771
5490 DATA B43A009FE6035F7B, 848
5500 DATA A7C81DC5D53E00CD, 1073
5510 DATA A556D1C178C60547, 1047
5520 DATA 18ED211607CD75BB, 832
5530 DATA 211A9F06047EC630, 600
5540 DATA CD84922310F7C9FD, 1235
5550 DATA 210024FD7E00FEFF, 957
5560 DATA C8FE02280BFD6E01, 871
5570 DATA FD6602E5FDE118EB, 1323
5580 DATA FD4E03FD4604FD7E, 1040
5590 DATA 05C5CDF155C130E5, 1203
5600 DATA FD7E05C9211D9F86, 940
5610 DATA FE0A3805D60A2B34, 644
5620 DATA 23772B7B86FE0A38, 774
5630 DATA 05D60A2B3423772B, 521
5640 DATA 7A86FE0A3805D60A, 805
5650 DATA 2B342377C32293CD, 830
5660 DATA 46943A0E9FA7C818, 840
5670 DATA F6D53E04CDA192CD, 1242
5680 DATA 4694CDC18CCB4BC4, 1230
5690 DATA B593CB5B28F13E05, 970
5700 DATA CDA192D1C9D53A29, 1234
5710 DATA 9FEE0132299FCB47, 922
5720 DATA 3E0620013CCDA192, 673
5730 DATA D1C9CD0055DD365F, 1070
5740 DATA C80100C01180FFDD, 1014
5750 DATA 365E50673A5F9F2E, 689
5760 DATA 01FE6538012D7C2D, 627
5770 DATA 2C28020AAC022D2C, 359
5780 DATA 28021AAC120313DD, 501
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5790 DATA 355E20EB7CF5D5C5, 1193
5800 DATA CD4694CD3A94C1D1, 1236
5810 DATA F1DD355FC8F521B0, 1264
5820 DATA 07097CF6C0474D62, 824
5830 DATA 6B115008A7ED527C, 822
5840 DATA F6C0575D3A5F9FE6, 1160
5850 DATA 07200C2150000944, 241
5860 DATA 4D21B0FF19545DF1, 984
5870 DATA 189DD51100091D20, 481
5880 DATA FD1520FAD1C9DDCB, 1390
5890 DATA 2C46C0DDE5CD6185, 1191
5900 DATA DDE1C9DDCB2C46C8, 1385
5910 DATA DDCB2C86D5DDE5CD, 1470
5920 DATA 0085DDE13E09CDA1, 1016
5930 DATA 92D1C9DDCB2C46C0, 1286
5940 DATA DDCB2CC6D5CDA7BC, 1439
5950 DATA 3E08CDA192D1C911, 1009
5960 DATA 06002100247EFEFF, 710
5970 DATA 2807FEFE280B1918, 655
5980 DATA F4E5FDE1FD3606FF, 1519
5990 DATA C9E5FDE1C9DD352D, 1428
6000 DATA C0DD362D06CD0055, 808
6010 DATA 47ED5FA8FE9A30F5, 1272
6020 DATA 4F064BCD7F94FD71, 1006
6030 DATA 00FD7103FD7001FD, 988
6040 DATA 7004CD0055E601C6, 835
6050 DATA 24FD7702FD7705C3, 982
6060 DATA A556FD210024FD7E, 952
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6070 DATA 00FEFFC8FEFE282C, 1301
6080 DATA FD4E03FD7100FD7E, 1079
6090 DATA 04FD77013D3D3DFE, 814
6100 DATA FD280AFEFA200CFD, 1104
6110 DATA 3600FE180FFD3605, 659
6120 DATA FF1800FD7704FDE5, 1137
6130 DATA D1CDD88E110600FD, 1048
6140 DATA 1918C3CB43C29E8B, 1005
6150 DATA CB53C49993CB4BC4, 1256
6160 DATA B593CB63C46B94CB, 1284
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6170 DATA 6BC45394C92A539F, 1019
6180 DATA ED4B089F79BD3808, 853
6190 DATA CB5228040D0D0D0D, 381
6200 DATA BC3008CB5A28040C, 593
6210 DATA 0C0C0CED43089FC9, 708
6220 DATA DD3534280D3A349F, 648
6230 DATA FE14C0010B06CD38, 745
6240 DATA BCC9010B0BCD38BC, 861
6250 DATA 3A299FCB3F32299F, 774
6260 DATA C9060821F857E57E, 938
6270 DATA 23666F111A9F0E04, 468
6280 DATA 1ABE2808300BE123, 583
6290 DATA 2310EBC923130D20, 586
6300 DATA EFD5C5CD4694C1D1, 1474
6310 DATA E122419F05DD7044, 889
6320 DATA 281E2106585E2356, 412
6330 DATA D521055878CB274F, 780
6340 DATA 0600545D1313EDB8, 642
6350 DATA 2A419F23D1722B73, 782
6360 DATA 2A419F5E2356211A, 540
6370 DATA 9F010400EDB0CDD2, 992
6380 DATA 95C9D5CDBC8ECD14, 1323
6390 DATA BC3E00CD96BB3E0C, 866
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6400 DATA CDA1922178583E07, 822
6410 DATA DD964447CB278085, 1013
6420 DATA 6F7CCE006706037E, 679
6430 DATA 23CD849210F93E22, 879
6440 DATA 260216112E111E17, 195
6450 DATA CD44BC3E30260416, 635
6460 DATA 0F2E131E15CD44BC, 592
6470 DATA 3E0DCDA1923E00CD, 854
6480 DATA 90BBE1060AE5C5CD, 1203
6490 DATA 4694C1E1CD09BB38, 1093
6500 DATA 173E20DDCB456E28, 760
6510 DATA 023E3FCD5ABB3E08, 679
6520 DATA CD5ABBDD344518DD, 1069
6530 DATA FE7F201578FE0A28, 858
6540 DATA D43E10CD5ABB3E0B, 845
6550 DATA E5CDA192E1042B18, 1037
6560 DATA C4FE0D200678A7C8, 988
6570 DATA 360DC9FE2038B64F, 871
6580 DATA 78A728B179FE6138, 1032
6590 DATA 06FE7B3002D62077, 798
6600 DATA CD84922305189EC9, 906
6610 DATA 117800218E013E0F, 390
6620 DATA C3D3973E00010000, 620
6630 DATA C5F5CD32BCF1C13C, 1379
6640 DATA FE1020F4C9CD14BC, 1160
6650 DATA 010000CD38BCCD93, 802
6660 DATA 96CD8896AFCD96BB, 1358
6670 DATA 3E05CD90BB210602, 644
6680 DATA E5CD75BB060821F8, 1033
6690 DATA 575E2356230E041A, 381
6700 DATA 13C630CD84920D20, 793
6710 DATA F63E30CD84923E20, 933
6720 DATA CD5ABBCD5ABB0E0A, 988
6730 DATA 1A13FE0D2806CD84, 695
6740 DATA 920D20F4545DE12C, 881
6750 DATA 2CE5CD75BB626B10, 1003
6760 DATA C8E13E10CDA19221, 1048
6770 DATA 9001223F9FDD3620, 708
6780 DATA 32DD364601CDFF8F, 999
6790 DATA CD5F913A0A9FED4B, 984
6800 DATA 089FCDA556CDBC8E, 1158
6810 DATA CD1855010000CD38, 576
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6820 DATA BCCD359ECD09BBDC, 1225
6830 DATA 8999D8CD19BDCD5A, 1220
6840 DATA 8F3A099FDD8646FE, 1048
6850 DATA 4B20123A469FED44, 717
6860 DATA 32469F3A0A9FEE80, 872
6870 DATA 320A9F1807FE0528, 549
6880 DATA EA32099F11059FCD, 838
6890 DATA D88ECD8F933A0A9F, 1080
6900 DATA 32079FEE01320A9F, 674
6910 DATA ED4B089FED43059F, 947
6920 DATA 2A3F9F2B223F9F7C, 687
6930 DATA B520A9C33E982180, 952
6940 DATA 2F11812F36000132, 345
6950 DATA 00EDB0C9DD34493A, 1018
6960 DATA 538957CD0055E61F, 858
6970 DATA BA38039218FA0E02, 681
6980 DATA 5F21802F856F7CCE, 877
6990 DATA 00677EA728111C23, 516
7000 DATA 7BBA38F621802F1E, 849
7010 DATA 000D20EE3E63C936, 699
7020 DATA 017BC9323F9FD5E5, 1039
7030 DATA 3E00CD59BCE1D13E, 1040
7040 DATA 01CD63BB0608D5E5, 948
7050 DATA CDC0BB78FE012002, 993
7060 DATA 3E06CDDEBB3A3F9F, 962
7070 DATA CDA192C5CD4694C1, 1325
7080 DATA E1D11B1B1B1B2B2B, 628
7090 DATA 10DC3E00CD63BBC9, 990
7100 DATA E5CD4694E12D20F8, 1202
7110 DATA 2520F5C9CDCA93CD, 1274
7120 DATA 14BC117800212C01, 423
7130 DATA 3E0FCDD397117800, 781
7140 DATA 2196003E0FCDD397, 827
7150 DATA 210005C31098CD07, 613
7160 DATA 8ACD1E8A3E003220, 655
7170 DATA 9FCD1C98CD7791CD, 1218
7180 DATA 99983E1111E60021, 664
7190 DATA 3200CDD397CDFF8F, 1220
7200 DATA CD5F91ED4B089F3A, 982
7210 DATA 0A9FCDA55621A000, 818
7220 DATA 223F9FCD09BBD8CD, 1078
7230 DATA 19BDCD5A8FCDB098, 1185
7240 DATA CD8F932A3F9F2B7C, 926
7250 DATA B520E53A5389673A, 881
7260 DATA 209F3CBC20B0C3A5, 1007
7270 DATA 963E04CDDEBB214A, 937
7280 DATA 00110000CDC0BB21, 634
7290 DATA 0000117C02C3F9BB, 774
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7300 DATA FD21002DFD7E00FE, 964
7310 DATA FFC8FE082839FE07, 1075
7320 DATA 207CFD4E03FD4604, 817
7330 DATA CD4255FD4608FD4E, 1018
7340 DATA 0579AE772310FAFD, 973
7350 DATA 35062010FD7E07FD, 746
7360 DATA 7706FD7E09ED44FD, 1071
7370 DATA 77091852FD7E03FD, 869
7380 DATA 8609FD77031847FD, 866
7390 DATA 4E03FD4604CD4255, 764
7400 DATA FD4609FD4E0579AE, 963
7410 DATA 777CC60867FE8030, 982
7420 DATA 0BF6C0677DC6506F, 1066
7430 DATA 7CCE006710E8FD35, 987
7440 DATA 072010FD7E08FD77, 814
7450 DATA 07FD7E06ED44FD77, 1069
7460 DATA 06180BFD7E04FD86, 811
7470 DATA 06FD77041800FD5E, 753
7480 DATA 01FD5602D5FDE1C3, 1228
7490 DATA B498CD8E97CDBC8E, 1365
7500 DATA 3E2ACD5ABBCD6999, 1049
7510 DATA 215389BE30EC3220, 809
7520 DATA 9FDDE5CD0085DDE1, 1393
7530 DATA C9CD7A99CB274FCB, 1205
7540 DATA 27CB27814FCD7A99, 969
7550 DATA 81C9CD06BBCD5ABB, 1210
7560 DATA D63038F6FE0A30F2, 1118
7570 DATA C9F53E42CD1EBBC2, 1190
7580 DATA C489F1C9CD14BC06, 1194
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7600 DATA 43059F3E42320A9F, 578
7610 DATA 32079FCDA556060F, 693
7620 DATA 0E64ED434E9FED43, 959
7630 DATA 4B9F3E4332509F32, 702
7640 DATA 4D9FCDA556DD3651, 1048
7650 DATA 02DD36520121038F, 539
7660 DATA 22539FC93E14CDA1, 925
7670 DATA 923E4206280E96CD, 689
7680 DATA A5560664C5CDC28E, 1095
7690 DATA CD4694C110F6CD94, 1231
7700 DATA 99CDC691CD799ACD, 1386
7710 DATA A18CCD1395CD2D95, 1073
7720 DATA 3A089F21059FBE28, 652
7730 DATA 0611059FCDD88ECD, 955
7740 DATA 379A114B9FCDD88E, 1023
7750 DATA CD8F93CD9E9AFEFF, 1521
7760 DATA C8CDE29AED4B089F, 1264
7770 DATA ED43059FED4B4E9F, 1017
7780 DATA ED434B9FC3F799ED, 1370
7790 DATA 4B4E9F3A519F814F, 818
7800 DATA FE0330093A519FFE, 866
7810 DATA 80300D1810FE9838, 691
7820 DATA 0C3A519FFE803005, 745
7830 DATA ED4432519F3A529F, 894
7840 DATA 8047FE023006DD36, 784
7850 DATA 52011808FE4A3804, 503
7860 DATA DD3652FFED434E9F, 1153
7870 DATA C9DD365500064016, 653
7880 DATA 031E0A0E00DD3455, 415
7890 DATA 3E44D5C5CDA556C1, 1189
7900 DATA D179C6104F1D20ED, 921
7910 DATA 0404152 0E4C9ED4B, 802
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7920 DATA 4E9F78FE32D8C603, 1078
7930 DATA 4779C6044FC5CD42, 941
7940 DATA 55C17EA7C83A529F, 1070
7950 DATA ED4432529FCB8079, 1048
7960 DATA E6F04F3E44CDA556, 1135
7970 DATA DD3555280A3E0111, 489
7980 DATA 0000CD6493AFC93E, 890
7990 DATA 00110001CD64933E, 532
8000 DATA FFC9ED4B4E9F78FE, 1379
8010 DATA 022837FE0D2803FE, 661
8020 DATA 0EC03A089F91C610, 790
8030 DATA FE00D8FE19D01E00, 987
8040 DATA FE0530041E021812, 385
8050 DATA FE0A30041E01180A, 381
8060 DATA FE0F30041EFF1802, 632
8070 DATA 1EFEDD7351DD3652, 1058
8080 DATA 01C9E1C921569F36, 960
8090 DATA 01233603233600CD, 387
8100 DATA 3D9BCD0DBD112C01, 685
8110 DATA 19225B9FC9211803, 570
8120 DATA CD75BB21569F3E30, 897
8130 DATA 8623CD84923E3ACD, 977
8140 DATA 5ABB3E308623CD84, 893
8150 DATA 923E3086CD84923E, 935
8160 DATA FFC9CD0DBDED5B5B, 1282
8170 DATA 9FA73EFFED52D8CD, 1383
8180 DATA 0DBD112C0119225B, 414
8190 DATA 9F21589F35F23D9B, 950
8200 DATA 36092B35F23D9B36, 671
8210 DATA 052B35F23D9BAFC9, 935
8220 DATA CD14BC11C800217C, 787
8230 DATA 013E12CDD3973A5D, 799
8240 DATA 9F215D9F34A7CAB7, 1048
8250 DATA 8B3DCAD4993DCA23, 1065
8260 DATA 9C3D18F20600CD42, 760
8270 DATA 550E04062878E60F, 514
8280 DATA F6C0E6AA57CB3FB2, 1369
8290 DATA 7723772310EF11B0, 756
8300 DATA 07197CF6C0670D20, 742
8310 DATA E2C9010000CD38BC, 877
8320 DATA CDC6910628 0E8CED, 985
8330 DATA 43089FED43059F3E, 764
8340 DATA 4A320A9F32079FCD, 714
8350 DATA A556062 30E143E4D, 465
8360 DATA ED430624ED430924, 695
8370 DATA 320824320B24CDA5, 561
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8380 DATA 563EFE320C240E74, 630
8390 DATA CDB49BDD360F00CD, 1035
8400 DATA 8896C9ED7362003E, 999
8410 DATA 15CDA1923E4D0628, 718
8420 DATA 0E96CDA5560664C5, 923
8430 DATA CDC28ECD4694C110, 1173
8440 DATA F6CD14BCCDDA9BCD, 1442
8450 DATA C18CCD1395CD7F9C, 1194
8460 DATA CD498DCD849DCDC3, 1313
8470 DATA 9CCDCD9DCD8F932A, 1260
8480 DATA 089F22059F2A0324, 446
8490 DATA 2200242A09242206, 197
8500 DATA 243A0B2432082 4CD, 440
8510 DATA C28ECD469418C8ED, 1220
8520 DATA 4B089FCB4A280405, 568
8530 DATA 200104CB42280678, 472
8540 DATA FE4A300104ED4308, 693
8550 DATA 9FCB62C49F9CC93A, 1230
8560 DATA 0F9FA7C03E4B3202, 722
8570 DATA 24320524ED4B089F, 606
8580 DATA 040479D6044FED43, 730
8590 DATA 0024ED430324DD36, 654
8600 DATA 0F01C93A0F9FA7C8, 816
8610 DATA FE012012CD8F93ED, 1037
8620 DATA 4B03243A0224CDA5, 580
8630 DATA 56DD360F02C9ED4B, 891
8640 DATA 032479FE7820350E, 633
8650 DATA 74CD42557EA72836, 859
8660 DATA CD8F93ED4B032479, 967
8670 DATA D604E6FC4FCD4255, 1135
8680 DATA 060436007CC608F6, 640
8690 DATA C06710F6DD360F00, 847
8700 DATA CD8F93ED4B03243E, 908
8710 DATA 4BC3A55630083E4B, 714
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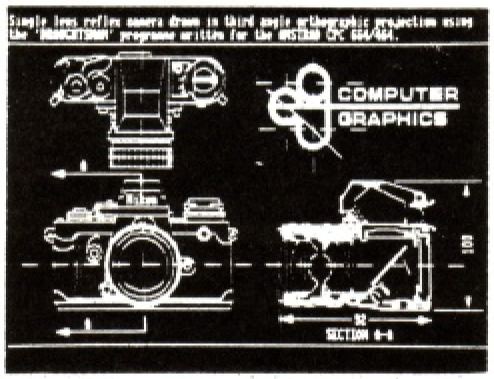
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8720 DATA CDF155DA3D9DED4B, 1279
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8760 DATA 110500AFCD64933E, 711
8770 DATA 4BED4B0324CDA556, 882
8780 DATA 3A0B24ED4B0924C5, 659
8790 DATA CDA556C1CD649DED, 1348
8800 DATA 7B6200C91E193E4C, 615
8810 DATA D5C5F5CDA556CD46, 1386
8820 DATA 94CDC28EF1C1C5F5, 1565
8830 DATA CDA556F1C1D1EE80, 1465
8840 DATA 1D20E5C9ED4B0924, 848
8850 DATA 78210C248647CB7E, 735
8860 DATA 2806FE05301A1804, 407
8870 DATA FE4638147EED4477, 950
8880 DATA 79C604FE6430144F, 824
8890 DATA 3A0B24EE80320B24, 568
8900 DATA ED430924110624CD, 613
8910 DATA D88EC9CD8F93ED4B, 1366
8920 DATA 089FC53A0A9FCDA5, 961
8930 DATA 56C1C35C9D3A0F9F, 955
8940 DATA A728063A0324FE60, 660
8950 DATA D0064E0E74CD4255, 778
8960 DATA E5545D131A014F00, 531
8970 DATA EDB812E17CC60867, 1097
8980 DATA FE8030ECC9113C00, 944
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9020 DATA 117CFF210000CDF9, 883
9030 DATA BB11000021EAFFCD, 931
9040 DATA F9BBC93E01110000, 717
9050 DATA CD6493CD4694CD79, 1201
9060 DATA 9BA720EFC90100BC, 983
9070 DATA 1E003E01ED797B04, 578
9080 DATA 03ED79051CD5C5F5, 1049
9090 DATA CD4694F1C1CD3A94, 1268
9100 DATA CD3A94D1FE2820E2, 1172
9110 DATA C9010000CD38BCCD, 856
9120 DATA 14BCCD88963E16CD, 988
9130 DATA A192063CC5CDC28E, 1111
9140 DATA CD4694C110F6C900, 1079
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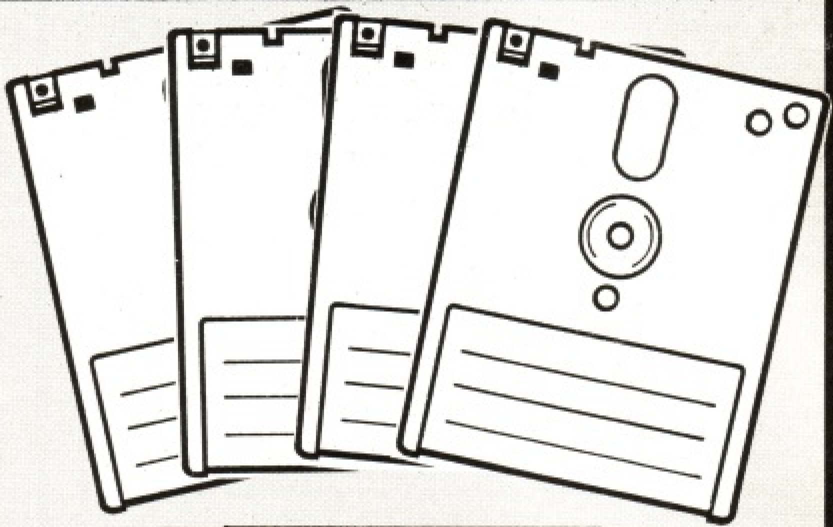
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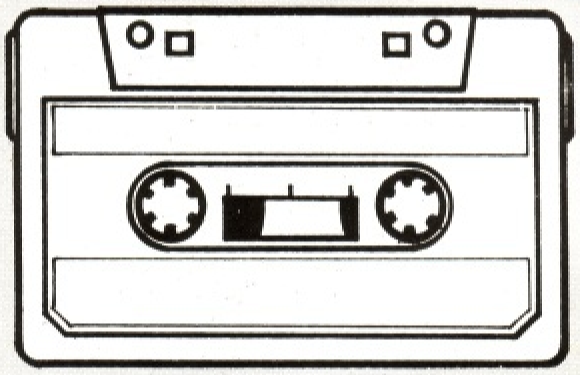
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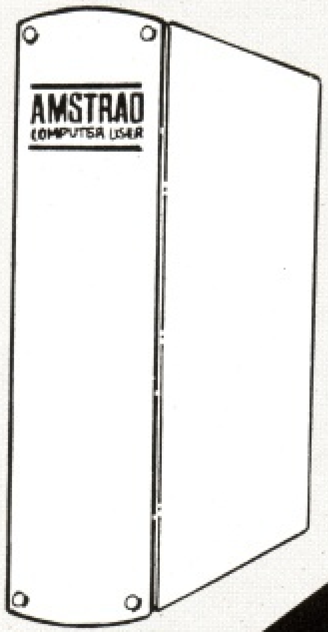
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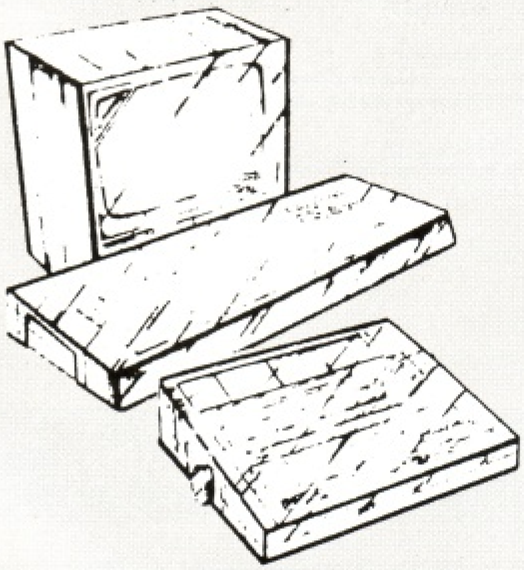
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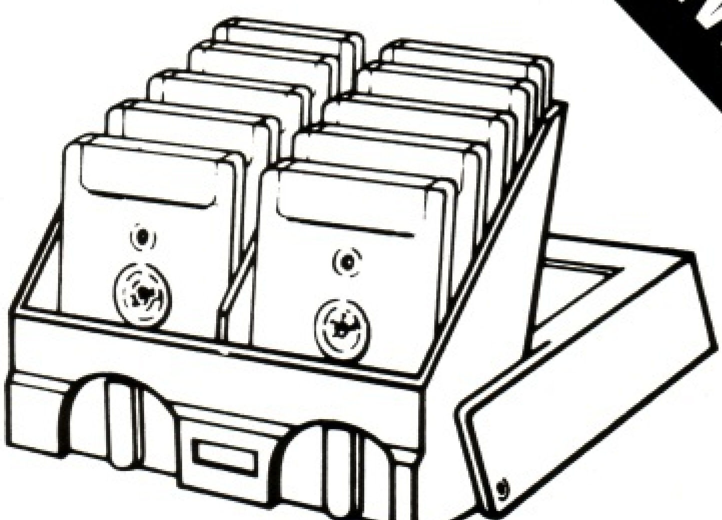
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The Least Significant Bit

Sick as a parrot

When *ACU* received a press release about World Cup football we didn't expect much. Not because it would be a game which would be released to coincide with 22 men kicking an air-filled ball around a bit of grass somewhere in South America, but because games which rely on cashing in on something are not as inventive as those which have grown from the mind of a programmer.

Sometimes the game scores merely through its tie-in. The US Gold game is a slightly enhanced version of Artic's World Cup football of around six months ago, yet thanks to all the hype it shot to number one – even if a lot of disappointed players did then take the game back. It is understood that US Gold looked into buying the rights to Amsoft's Glenn Hoddle Football, but that fell through. Firebird messed up the Comet game by commissioning the program too late and believing that the programmer could make tight deadlines. They missed Halley's comet by one month or 74 years, depending on how you look at it.

Very few tie-ins actually manage to capture the spirit of the thing they are cashing in on. The Rocky Horror Show managed it, so did Hitchhiker's Guide to the Galaxy, but things like V and even Battle of the Planets – albeit a great game – fail to capture the atmosphere of the main theme.

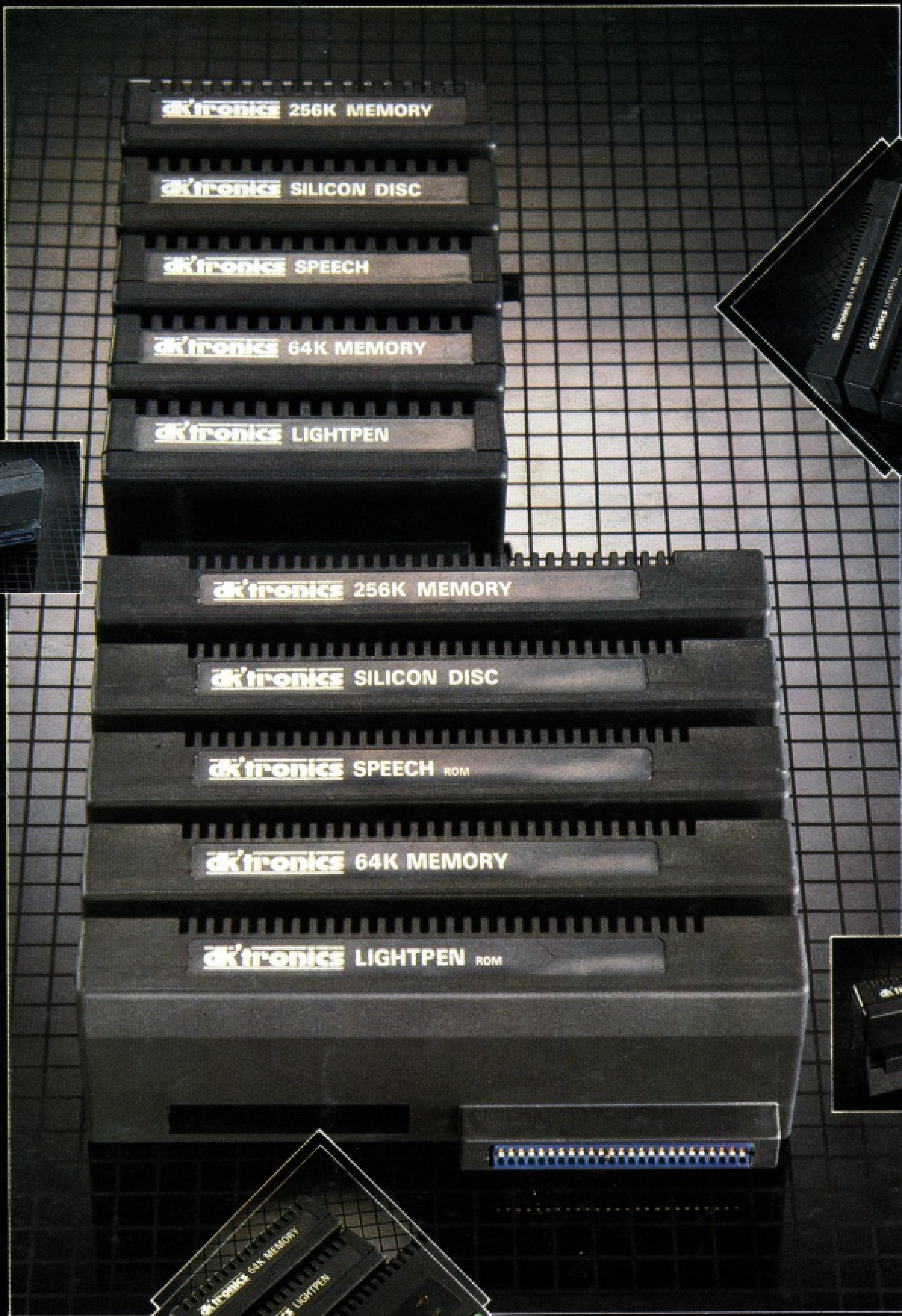
The best programs are those which are designed to make the most of the computer, especially those which are designed on the computer they are sold on – conversions are rarely better than the original. Spindizzy started life as an Amstrad program. It has now been converted to the Commodore 64 and Spectrum with plans to produce cartridges for the Nintendo games console – there are seven million of those in Japan – and maybe the greatest accolade of all – a Spindizzy arcade machine. Yet author Paul Shirley refuses to produce another Spindizzy with different rooms for fear of being accused of cashing in.

Spindizzy sells well because it is an excellent game. Budget games sell well because they are cheap but there is a whole range of programs which are good but go unnoticed, like The Devil's Crown. If that had been given a name like Simon Le Bon's Underwater Adventure with a huge advertising budget it would have been much more successful, but the game would have been no better.

It is a shame that some of the games which are pretty good suffer at the expense of those which are hyped trash. Occasionally a big name game flops – when players don't buy just on the strength of the cover – but the number of big names at the top shows that too often good marketing beats good programming.

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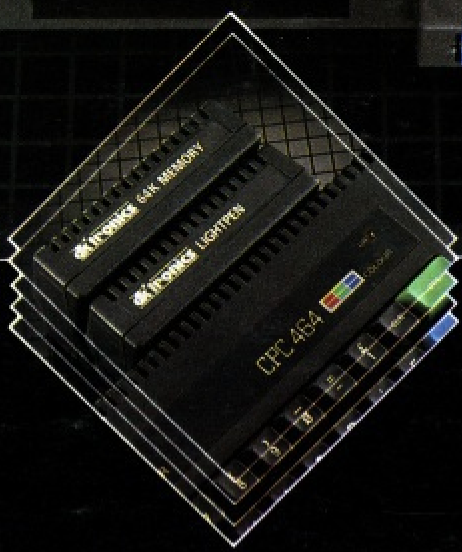
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